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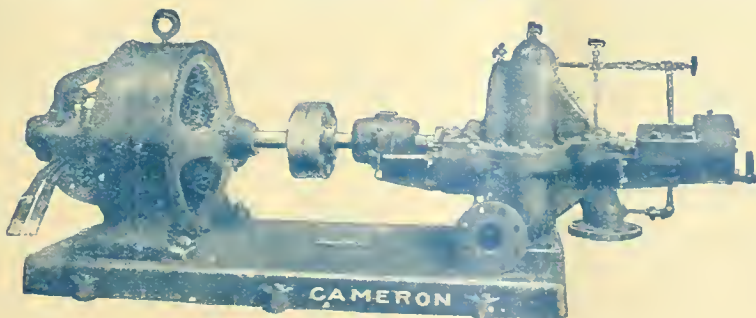
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TO

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JOHANNESBURG.

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September 7th, 1918, to February 22nd, 1919.

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Notes and News.

The industrial position is much more settled since last week. The ballot of miners on the question of accepting or rejecting the offer of the Chamber of Mines which provided for an increase in the war bonus, involving one million sterling was accepted by a majority of 5 866, the figures being 8,382 in favour and 2,516 against. The large number who did not vote can be accepted as agreeing with the majority. The members of the Amalgamated Society of Engineers accepted the offer by a majority of 100, and the other mechanics' unions agreed to the acceptance by majorities not so large proportionately as in the case of the miners. The ironmoulders remain on strike and have broken with the Federation of Trade Unions.

With reference to the announcement which appeared in our columns recently to the effect that the firm of Messrs. Barnato Bros. are largely interested in the reconstruction of the Lace Proprietary Mines, Ltd., we are now advised that the information is correct.

The following is a summary of the operations of this company for the quarter ended 31st July, 1918. The development footage accompanied during the quarter amounted to 1,102 feet, the footage sampled being as follows:—Main Reef: Footage sampled, 280; reef width, 39 inches; reef value, 9.15 dwts. South Reef: Footage sampled, 500; reef width, 32 inches; reef value, 5.79 dwts. Tons milled, 275,800; working profit (including sundry revenue), £15,582, less, however, £2,967 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc. The increased profit is due to improvement in grade.

It is officially announced that the London Committee of the Anglo-American Corporation of South Africa, Ltd., will consist of Messrs. John Edward Humphery and Charles Vincent Sale (Messrs. J. P. Morgan & Co., of New York), Frederick William Green (National Discount Company, of London), John Alexander Agnew, Louis Oppenheimer and Brigadier-General Herbert Swaine Fitzgerald, C.B. The New York Committee will consist of Messrs. Thomas William Lamont, Charles Hamilton Sabin, William Boyce Thompson and William Lincoln Honnold. The bankers of the corporation are:—In South Africa: The National Bank of South Africa, Ltd. In London and New York: The Guaranty Trust Company of New York. The Consolidated Mines Selection Company, Ltd., Second Floor, The Corner House, Johannesburg, have been appointed Secretaries of the Corporation, and Mr. C. W. Moore, of 5, London Wall Buildings, Finsbury Circus, London, E.C., is the Secretary of the London Committee.

The capital of the Wankie Colliery Co. has been increased from £410,000 to £600,000, by the creation of a further 380,000 shares of 10s. each. Of these new shares 324,100 were issued in June, 1918, at 10s. 6d. per share. The proceeds will be utilised to cover capital expenditure already incurred, and to provide funds for the completion of a farther 56 retort coke ovens, and for the augmentation of the existing plant required to cope with the increased business of the colliery. Of the £93,000 six per cent. first mortgage debentures originally authorised and issued, £72,000 remain outstanding. For the year ended August 31, 1917, the sales of coal and coke were 310,826 tons and 70,827 tons respectively, compared with 304,628 tons and 45,964 tons respectively for the year ended August 31, 1916. For the nine months ended May 31, 1918, the sales of coal and coke amounted to 241,004 tons and 58,724 tons respectively.

The effects of the war upon the general prosperity of Rhodesia, according to the annual report of the B.S.A. Co., have been in some respects favourable and in others adverse. On the one hand, in this era of high prices, the farmers are undoubtedly prosperous; on the other, the gold mining industry has been hit by the increased cost of stores and management, gold being the one commodity the price of which cannot be increased. The causes which have depressed gold mining have reacted favourably upon the base metal industry and have stimulated enterprise and production. In particular, the prevailing high prices for copper have encouraged the production of this metal within Rhodesia and have also led to a greatly increased output from the mines in the Congo State. This expansion has resulted in a substantial benefit to some of the most important interests of the company. The Congo mines are dependent upon the Rhodesia railway system for their transport and upon the Wankie Colliery for their supplies of coal and coke, in both of which undertakings the company is so largely interested. The colliery, in spite of large additions to its plant, is working at the utmost limit of its capacity in order to cope with the increasing demands made upon it. The high prices now ruling for chrome ore, asbestos, lead, tungsten, and other minerals and metals have similarly caused great activity in the search for and production of these commodities. A number of new and promising discoveries have been made, and it is now practically certain that in the future the base mineral deposits of Rhodesia will rival its gold deposits in importance, from the point of view both of value, and of their beneficial effect upon the economic progress of the country.

According to the annual report of the B.S.A. Co., Ltd., the total value of the mineral output of Southern Rhodesia for the year ended December 31, 1917, was £4,639,335.

The dividends declared by Rhodesian mining companies during the year ended December 31, 1917, amounted to £691,260, an increase of £49,279 as compared with 1916, which was previously the record. The value of the cattle exported from Rhodesia to outside markets during 1917 was £136,000. The number of cattle on the company's ranches has increased to 66,000 head. The further rapid development of the copper mines in the Congo continues to furnish a valuable and expanding market for Rhodesian coal, stock, and agricultural products, and is bringing most valuable traffic to the Rhodesian railways. The net earnings of the railways have risen from £361,833 in the year ended September 30, 1916, to approximately £924,000 in 1917, which latter amount shows an excess over the pre-war figure of £921,100 in 1913. During the year there was a surplus on administrative account for Southern Rhodesia of £958, as compared with a deficit of £12,062 for the previous year. The commercial accounts for the year ended March 31, 1917, show that revenue exceeded expenditure by £174,731, as compared with £123,366 during the previous year. The total commercial revenue for the year was £437,495.

Of the 40,000 shareholders of the British South Africa (Chartered) Co. there were, according to the London papers, more than 1,000 present in the Great Hall at Cannon Street Hotel recently at the annual meeting, over which Mr. P. Lyttelton Gell presided. Despite a little scattered complaint (more particularly at the absence of any hint as to when a start of dividends may be expected), the general satisfaction with which the gathering heard Mr. Gell's exhaustive explanation of the position of the company as affected by the Privy Council's recent decision in the great Southern Rhodesia land case may be inferred from the fact that the directors' report was approved unanimously. The chairman naturally devoted the greater part of his speech to the Privy Council's decision, and claimed that so far as it affected the future it gave the company a guarantee from the Imperial Government for the reimbursement of past administrative expenditure, which added greatly to the stability of their position. The judgment, he went on

to say, while it gave the surface rights of the unalienated lands in Southern Rhodesia to the Crown, did not deal with Northern Rhodesia, nor with Nyasaland, the Bechuanaland Protectorate, the railway position, the mineral rights, or, broadly speaking, touch the company's interests in its own industrial undertakings and in other companies. Mr. Gell's speech provided a striking review of the progress of Rhodesia in the thirty years of the Chartered Company's rule and a strong case for generous compensation when the administrative rights are handed over.

Mr. S. S. Kennedy, Winchester House, Old Broad Street, E.C. 2, recently issued a circular to the shareholders of the Rhodesia Consolidated, Ltd. (enclosing a map of the company's claims on the Far East Rand), in which he said:—"In view of the forthcoming annual meeting of our company, I enclose you an official diagram of our 600 claims on Vogelstruisbult, from which it will be seen that we occupy the immediately intervening ground between that which our consulting engineer has described as 'traversed from end to end by the richest course of the gold-bearing reef of the Far East Rand.' Very shortly the question will arise of the early development of our property by way of amalgamation or other wise, and the commanding position occupied by our compact block of claims will then doubtless receive due recognition by those approving the details."

The output of Rhodesian chrome for the year ended Dec. 31, 1917, amounted to 72,962 tons, the slight reduction as compared with the previous year being due to transport difficulties. New chrome deposits have been discovered which may prove of importance. The annual report of the B.S.A. Co. adds:—"Prospecting for base metals and minerals has continued to be active, and many samples have been submitted to the resident mining engineer and the director of the geological survey, who have examined them and advised as to the values and prospects of profitable working. Difficulties in connection with the transport of ores by land and sea have retarded development of some base metal propositions, but it may be noted that shipments of tungsten ores (wolframite and scheelite) are now being made regularly. Arsenic is also being produced on a substantial scale for manufacture in South Africa into arsenite of soda for use as a cattle dip."

The report has been issued of the Executive Committee of the Association of Chambers of Commerce of South Africa. At its last meeting, the Congress, while appreciating the action of the Government in the administration of the Trading with the Enemy Act, recommended that its provisions be more generally applied, and that all the interests of enemies and enemy subjects be placed under the control of the Custodian of Enemy Property and liquidated as expeditiously as possible. In reply, the Minister of Finance stated that the Government was taking control of all enemy businesses, but their liquidation was a very difficult question. To carry out the resolution indiscriminately might mean that British and other interests in enemy countries would seriously suffer, but it was always competent for British companies which contained any enemy interest to make application to be liquidated. The main thing was that the German holder of shares should not be allowed to continue to receive any benefit from the business, and this was being ensured by the Government. No enemies resident outside of the Union receive any advantages from the continuance of any commercial or financial business. In any case where the Government proposed to liquidate it was required to prove to the Court that such a course was for the benefit of the company as a whole. In the meantime the Government was keeping possession of all enemy interests, and the settlement at the conclusion of the war would decide how they would eventually be disposed of. At present all such interests were being vested in the Custodian of Enemy Property.

TOPICS OF THE WEEK.

A SOLUTION OF THE GOLD PROBLEM.

It is an open secret that one of the low-grade mines of the Rand will shortly close down, and its passing will, in the event of no relief being forthcoming, be followed by that of others. The news lends additional interest to the discussion of the gold question which, we note from the mail papers, is becoming the chief topic in London and American mining circles. In the U.S.A. gold mining has been listed as an essential industry, according to an announcement of the War Industries Board on July 19, and all reasonable priority of material and supplies used in gold production will be given. The action was taken on request of the Treasury Department. The decision was interpreted by an official of the Priorities Committee to mean that every possible assistance would be given the gold mines in obtaining necessary materials. It is noteworthy that, in his address on the subject delivered before the London Chamber of Commerce on July 30, Sir Lionel Phillips said:

Gold, I am convinced, is essential to the resuscitation on a sound basis of the nation's finances. The standard price for gold cannot, and should not, be altered, but loss incurred by gold producers on realisation of their product should be, and must be, reimbursed if a serious shrinkage in the supply of gold is not to result. It can be proved, I think, that the Government has made a large profit by purchasing the output of the Empire at the standard price and paying for it in the present currency, by using the gold to regulate the foreign exchanges, which would have been more adverse without it, and by the creation of a large amount of paper currency. In a certain degree the gold producer has paid for the interest undoubtedly earned by that paper which is not at present backed by gold. Assuming that profits, as indicated, have been made, it is only reasonable and equitable, as it is necessary in the interests of the State, that a fair proportion of them should be paid to the gold producer. Otherwise it is quite certain that the production of gold in the British Empire will steadily and rapidly fall off. The suggestion has been made that a subsidy should be given to low-grade mines. I disagree entirely with that remedy as one impossible of application. The only basis to go on is that of gold value. No one could reasonably object, I think, to a stipulation that any profit per ton upon ore of any given yield in excess of that derived from similar ore taken over an average of, say, one year before the war should be refunded to the purchaser of the gold. Such a condition would prevent any producer from being unduly benefited.

In America, it appears that the Secretary to the Treasury awoke the other day to the fact that the gold industry was doomed unless measures for relief were taken promptly. At his request a hearing was given in San Francisco by Mr. Raymond T. Baker, Director of the Mint, to the gold miners of California, at which ways and means for saving the industry were considered. Prior to that Mr. McAdoo had written to Mr. Charles A. Sulzer on this subject, making the unequivocal statement that, "at no time has this country so much required the largest possible production of gold as at present. Next to food and ammunition gold is one of the most needed war essentials. In order to face the enormous amount of Government bonds required to finance our war expenditures a large credit-structure will inevitably be erected on our gold reserves, and it is necessary that those reserves, which are the foundation of the structure, shall be maintained on the broadest possible basis." Confirmation of this authoritative opinion has been given by many of the leading financiers of America. In that country the importance of gold mining, therefore, is not being debated, the question is merely that of finding a practical means of fostering it. The California Metal Producers' Association has laid before the authorities at Washington the facts regarding the stress of weather against which the gold miners are contending, and Mr. Charles G. Yale has made a special report on the subject at the request of the Treasury Department. It is estimated that the output this year will decrease 85 per cent, unless an effective stimulus be applied. In California the decline in the first six months of 1918 has been alarming. The output was 66 668 ounces, against 89 830 for the corresponding period of 1917. In discussing the matter the *Mining and Scientific Press* says:

"In an effort to escape from the danger, proposals are being made that would be condemned as wrong in principle were it not for the serious peril confronting the gold industry. The plan that seems to have gained the larger number of adherents is to pay a bounty of £2, or some would have it £4, per ounce on all new gold

produced. The American Mining Congress is urging this idea upon Congress, with the approval of many Western miners. It is a crude and reactionary method, but, for a time at least, it would be effective. That it would prove a relief for the duration of the War, and through the period of reconstruction afterward, is open to serious doubt. It is like keeping a patient alive by stimulants instead of finding a cure. Nevertheless it has something to commend it, whereas the proposal to increase the unit value of gold is a contradiction in terms. That notion seems to have been advanced independently in America and in England. We may mention a much simpler method for relieving the stress, namely, to exempt gold mines from Federal taxes, and to supplement this by according similar exemption from local taxation. On the time-honoured theory that gold belongs to the sovereign, this mark of sovereign favour and need, on behalf of the sovereign people of this democracy, would introduce no new and extraordinary principle. It would merely accentuate the distinction of the monetary metal as vitally necessary for the Nation's financial health and for the stability of its public obligations."

This reasoning, it will be seen, follows much the same line as that indicated in these columns last week, viz., that the easiest and most obvious shape relief should take lies in the remission of taxation. The question now is: Will the Union Government take that step to save the other low-grade mines before it is too late?

THE G.M.E.'S ANNUAL REPORT.

THE annual report of the Government Mining Engineer for 1917, issued this week, is as full as usual of interesting facts and figures reflecting the progress of the industry under war conditions. The chapters dealing with mine accidents and the extracts from the reports of the inspectors of mines are full of valuable information that cannot be summarized, and we print elsewhere portions of those chapters. Sir Robert Kotzé, in his review of the year, gives his customary broad survey of the industry. He states that the mineral output of the Union last year was valued at £52 260,190, an increase of £1,666 831 compared with 1916. The gold output was £38,307,675, a decrease of £1,183,315 compared with the 1916 total, whilst the value of the output of copper, gypsum, iron pyrite, antimony, and lead also showed small decreases. The diamond output showed an increased value of £1,985,419, coal £535,943, silver £66,686, and lime £15,623. There were also increases in coke, tin, corundum, asbestos, salt, soda, talc, tungsten, etc. Coal mining in the Transvaal showed an increase in output and also in value per ton. Though fewer persons were employed, the salaries and wages paid totalled £18,178,963, against £17,505 661 in 1916. White wages rose from £9 657,060 in 1916 to £10 559 497 in 1917. The stores consumed on mines, etc., were given at £14,923,265 last year, against £13,995,258 in 1916. Thus in wages and stores alone the mining activities of South Africa circulated a sum of over £33,000 000 in 1917, "of which," remarks Sir Robert Kotzé, "the great bulk is paid out in the Union." In the course of his report Sir Robert Kotzé mentions that the Power Undertakings Board held nine sittings during the year. The chief business was the consideration of sundry amendments to the licence of the Victoria Falls and Transvaal Power Company, Ltd., to enable power to be supplied to the Sub Nigel Mine and the Fertilizer Factory at Rietfontein, and also to construct a transmission line from the Simmer Pan to the Cinderella (Consolidated) Gold Mine. The Board also considered and reported on an application from the Kleinfontein Power Association to amend its certificate of exemption under Section 3 (3) of the Power Act in order to include Modderfontein East Gold Mine and Rand Klip, Ltd., as a member of the Association. During the year two trials were conducted with Thorne's safety catch for use in incline shafts. Both tests were unsuccessful. Under Government Notice No. 66, dated 4th January, 1918, this Committee was dissolved as from 31st December, 1917. At one sitting held in November the Committee reported to the Minister that the experience of the last ten years did not justify insistence on the use of safety catches in mine shafts and that this period had coincided with greater stringency of Government inspection and increased attention on the part of mine officials in respect of ropes and winding operations generally. In the opinion of the Committee there was no longer justification for continuing its functions to consider and test safety devices for the prevention of winding accidents in mines.

THE COLOUR BAR IN MINING REGULATIONS.

Important Statement by Mr. Moffat, Commissioner on Native Grievances.

In the course of his report on Native Disturbances in Johannesburg Mr. Moffat, the Commissioner, writes:—Saul Msane, an ex-compound manager, the principal speaker at the meeting with the Prime Minister, said:—"The whole trouble in the compounds is due to the colour bar. A native may know his work very well, but on account of his colour he cannot obtain advancement. Many natives are well acquainted with and qualified to perform different classes of underground work, but owing to this colour prejudice they are not given these special forms of employment. If natives who possess higher qualifications could obtain better pay it would encourage them to improve in their work and would bring about peace and satisfaction." The facts are as stated, and it is generally admitted that many natives who have worked in the mines for fairly long periods are fully competent to undertake duties from which they are now barred by the regulations and by the opposition of the European workers to the employment of natives on skilled or even on semi-skilled work, which the Mine Workers' Union consider should be reserved entirely for European workmen. The Mines and Works Act, 1911, provides in Section 4 (1) that the Governor-General may make regulations in respect of or in connection with certain matters or things specified. Amongst these, under paragraph (a), is—"the grant, cancellation of, and suspension of certificates of competency to (1) mine managers, (2) mine overseers, (3) mine surveyors, (4) mechanical engineers, (5) engine-drivers, (6) miners entitled to blast, and (7) such other classes of persons employed in, at, or about mines, works, and machinery as the Government may from time to time deem it expedient to be in possession of certificates of competency." In the first chapter of these regulations the expressions "banksman," "ganger," "manager," and "onsetter" are defined as a "white person," etc. This definition is, however, qualified by a proviso that the word "competent" is to be substituted for the word "white" in the application of the regulation to the Cape and Natal Provinces. Regulation No. 285 in Part IV., Chapter VII., dealing with certificates of competency, reads as follows:—"Certificates shall not be granted to any coloured persons in the Transvaal and Orange Free State, and certificates granted to any coloured persons in any other Province shall not be available outside such Province." There is nothing in the section under which these regulations are framed, or in any other portion of the Act, that authorizes the enactment of regulations such as these discriminating between sections of the community on the ground of their colour. The regulations make a distinction on colour lines, and in that respect must be regarded as *ultra vires*. The existence of the regulations is, however, not the real bar to the employment of natives on skilled or semi-skilled work. The real power behind the throne in this matter is the white worker, who objects strongly to anything approaching encroachment by black labour on what he regards as his own particular preserve. Apart from the employments from which natives are debarred by the regulations there is a good deal of semi-skilled work which natives are competent to do, but owing to the opposition of white workers in the Transvaal natives cannot be employed on it. It is stated, moreover, that to a great extent the South African Mine Workers' Union is supported by Transvaal public opinion in the attitude taken up by it in this matter. This means that one of the principal industrial avenues along which the natives might legitimately hope for advancement is to be closed to them, and that a policy of repression is to be followed. No one who has the interests of South Africa at heart can look forward without anxiety to the effect of such a policy on the country's future. Whatever public opinion may be there can be no question that the coloured and native races are not going to be content to be hewers of wood and drawers of water for ever. They are advancing, and even if we wished to do so we cannot prevent their

further development. Public opinion must recognise this sooner or later. If artificial means of arresting that development are resorted to it will simply mean our antagonizing the natives. Sinister and undesirable influences brought to bear upon them will have ample scope for mischief. Instead of the natives being law-abiding and contented citizens, they will become a menace to the country's peace and prosperity. In the native we have a valuable asset, and if the country is to reap the full benefit of this industry no obstacle should be placed in the way of their improving themselves and enhancing their value to the community. According to a return furnished by the Director of Native Labour, out of 182,938 natives employed on mines and works on 30th June, 1918, 14,316 have been continuously employed for two years and more, viz., 5,010 on surface work and 9,306 underground. These figures show that there is a tendency for natives to become regular workers, which should be encouraged. The Government should relieve itself from the odium attaching to it in the matter by withdrawing the colour bar provisions from the regulations, and thus show that it at least is no party to obstacles being placed in the way of natives rising to positions to which their industry and ability entitle them. It will not of course necessarily follow that the colour bar will not remain in practice if the regulations are amended. Their amendment will, however, remove the grievance the natives have against the Government, which, as long as the regulations stand, is regarded as responsible for the disabilities under which natives suffer in this respect. The question of the extent to which use is made of the natives' capacity for classes of work from which they are now excluded will be a purely economic one to be dealt with by the mine owners. They will have either to submit to their white employees who have the support of public opinion and run the risk of having to put up with an inadequate supply of native labour, or on the other hand to face a struggle with the Mine Workers' Union in order to satisfy their native workers. As dividends tend to fall off shareholders will realize that white labour is being subsidized at their expense in order to protect white labour from the competition of black labour. They will then have something to say in the matter. The recent demand made by the Mine Workers' Union for the dismissal of coloured drill sharpeners employed on the mines—of whom there are only seventy-three—indicates a determination by the white workers to press their claims to the exclusive right to certain employments. Persistence in this policy on the part of the white workers will be fatal to the industry and to the best interests of the country generally. The mining companies have inaugurated a system of promoting experienced natives to the rank of gang leaders, who, while employed as ordinary labourers, assist the European supervisors in directing the labourers in the gangs and instructing them in the details of their work. This has afforded intelligent and trustworthy natives opportunities of assuming a certain amount of responsibility and earning higher pay. It cannot, however, be regarded as a final solution of the difficulty.

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THE MINING INDUSTRY OFFICIALLY REVIEWED.—I.

Some Extracts from Annual Reports of Inspectors of Mines.

JOHANNESBURG INSPECTORATE, TRANSVAAL (C. J. GRAY).

Labour.—The average number of persons in service on mines during the month of December in the years 1916 and 1917 were as under:—

	Whites.	Coloured.	Total.
December, 1916	7,139	59,730	66,869
Decemocr, 1917	7,004	50,610	57,614

The reduction in labour employed during 1917 was due to the impracticability of obtaining an adequate supply of native labour. It will be noticed that the ratio of coloured to white, which in 1916 was 8'37 to 1, fell to 7'23 to 1. Difficulty in obtaining a sufficient number of skilled Europeans continued, but was less serious than in the previous year. White employees, however, appeared to realise more clearly the dependence of the mines on their services and became more independent in their attitude towards employers. There were several small disputes on particular mines, but no serious strikes. The more general grievances, or aspirations for better conditions among the employees, were dealt with by conferences which seem to have been unusually successful. **Health of Workmen.**—General health conditions were good. No serious epidemics among mine employees occurred and there was a very marked diminution in cases of pneumonia. Anti-pneumonia inoculation was greatly improved and its use extended. The number of persons debarred from underground work as a result of medical examination of mine employees for tuberculosis of the lungs has proved unexpectedly small. Reports on mine sanitation received from the municipal mines sanitation inspectors have been almost invariably satisfactory. With regard to miners' phthisis the impression appears to have become fairly general that, given maintenance of present precautions, an individual runs little risk of contracting the disease except through his own carelessness or misconduct. Conditions re dust prevention have improved during the year under review, the requirements of mine dust samplers and of a water hose for each machine drill, by the amendments of the Mines and Works Regulations, probably being the principal causes of that improvement. Carelessness and breaches of the regulations for phthisis prevention, by white mine employees, continue to come to notice, and occasionally there is reason to believe that mine officials have been slack in complying with, or enforcing, those regulations, but in proportion to the numbers of employees and officials such offences are rare. Coloured employees also are more careful to use water. On the whole, ventilation of the mines is good, but there are still defects which must be removed. The Robinson Deep Mine is the most defectively ventilated, but its condition, and that of the Robinson, which takes return air from the Deep, should be greatly improved when the Chris Vertical Shaft connects with the workings early in the present year. Former practice in some mines of leaving no drive pillars, and supporting stopes by no more than props and pigsties, though it may have been good mining with regard to control of the hanging wall, has made coursing and proper distribution of the ventilating current exceedingly difficult. **Sand Filling.**—As in the previous year the Crown Mines, Limited, filled extensive worked-out areas with sand. The amount sent underground during 1917 is reported by the general manager to be 633,742 tons. The result in keeping the hanging wall of the workings steady has been excellent. The City Deen (216,371 tons), Wolhuter (47,570 tons), and City and Suburban (23,285 tons) also did some sand filling during the year. **Inflow of Water.**—The exceptionally heavy and continuous rains towards the end of the year caused a good deal of inconvenience and loss to some of the mines. A heavy hailstorm at the Consolidated Langlaagte blocked a drainage trench, and allowed so much water to get down through old outcrop workings as to stop shaftsinking for some weeks. Such an effect of hail is a contingency liable to be overlooked when surface drains are designed. It has been a general experience that the amount of pumping to be done has greatly increased. At the Robinson Deep large quantities of water, supposed to be from the Robinson Dam, are entering the mine through rock fissures. **Falls of Rock.**—With increased depth, increased area of the worked-out portions of the mines, and diminution of the patches of reef remaining unworked, but surrounded or almost surrounded by worked-out areas, movement of the hanging wall and pressure on pillars and working faces has become greater, but the increased attention given to support of the hanging wall has apparently more than compensated for the increased

difficulties. A serious accident at the Langlaagte Estate Block "B" Mine resulted in considerable increase in the number of pigsties and packs in mines in the western portion of the inspectorate. Papers read by Messrs. Cazalet, Hildick Smith, and Seloy before a joint meeting of the Institute of Engineers and the Chemical Mining and Metallurgical Society stimulated interest in the problem of supporting workings where pressure and movement of the hanging wall are great. The papers dealt primarily with a system of reef packing used with success at the Ferreira Deep Mine, where numerous large packs of broken reef are built close behind the working face and allowed to remain until the stope or section has been worked out. The packs are then reclaimed, props and unfilled pigsties being substituted. The enormous pressure met with in the mine requires very extensive support close to the face to keep the stopes open and safe, but when the hanging has partially settled on the packs the strain on it has been relieved, so that the packs can be removed without that risk of sudden movement and breaking up of the hanging wall which must be guarded against in the first working. The usual method of giving general support in the inspectorate is by pigsties or packs. Much attention has been given by mine officials to methods of increasing the efficiency and decreasing the cost of those supports. At the Robinson Mine pigsties are successfully used closer to the working face than the officials on most other mines will admit to be practicable. Success at this mine is claimed by the manager, Mr. Palmer Carter, to be due to driving in short lengths of lagging above and at right angles to the top lagging pole of the pigsty, thus fixing it tightly so that it will not move when struck by rock from the blast. Mr. Hilton's pigsties constructed at the Village Main Reef Mine from blocks and planks have proved successful under very severe trials, due to sudden movement of the hanging wall accompanied by earth shocks. Towards the end of the year, however, their use had to be discontinued owing to difficulty in obtaining timber for the blocks, arising from interference with transport by the exceptionally continuous rains. At the Meyer and Charlton, Mr. Nitch, the manager, has initiated use of a pack which has some novel features. Four posts known as umbrella sticks are first erected at the corners of the intended pack. They are ordinary props surrounded by a casing of lagging poles held in position by birding with wire. A packet open on the up-stope side is built of lagging poles with the posts at its corners and filled and packed with reef. It is intended to withdraw the umbrella sticks when the packs have taken weight and subsequently to reclaim the reef in the packs as is done at the Ferreira Deep. Rock-bursts, both coincident and not coincident with observed earth shocks, demanded much consideration. Most of the stronger shocks were apparently coincident with rock-bursts or movements of the walls of working places in the mines, but owing partly to thorough support of the hanging wall and partly to the fact that the most serious bursts occurred when men were out of the working places concerned, the loss of life involved was comparatively small. In the Crown Mines, No. 1 Section, sudden movement occurred on 2nd August in the area east of the Robinson Dyke. Both South and Main Reef Leader working stopes, separated by a parting of 80 feet, were seriously affected; ordinary timbers were broken, the numerous packs and pigsties were squeezed, and many small falls occurred between them, but only one native was killed. In the Village Main Reef, on 17th August, four natives were killed—two in the South Reef and two in the Leader—and many injured by rock which burst from the stope faces at the time a shock occurred. The faces in the two reefs, separated by a parting 60 feet thick, were advancing in opposite directions, but were practically vertically over one another at the time of the accident. The pigsties took weight, but prevented falls of hanging. On the night 14th-15th November a very violent shock occurred just after midnight. In the morning it was found that portions of the Village Main Workings, east of the scene of the accident last referred to, had suffered severely, pillars and the roofs and walls of travelling ways being shattered and the entrance to one small stope closed.

(To be continued.)

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THREE SEAS BRAND.

ACCIDENTS ON WITWATERSRAND GOLD MINES.*—I.

Annual Review by the Government Mining Engineer of Conditions Generally.

THE accident death-rate for Witwatersrand gold mines is 2·64 per 1,000, showing a gratifying improvement on the figure for the previous year, which was 3·16 per 1,000. This death-rate is not only the lowest on record, but is the first to fall below the rate of 3 per 1,000. The absolute reduction in the number killed in 1917 as against 1916 is 170. In the deeper mines, and in the worked-out areas, increasing trouble is being experienced in keeping existing workings open and safe and, if progressive satisfactory results are to continue, more, and in some cases expensive, precautions will have to be taken to reduce accidents from rock-bursts and falls of hanging. The mines with the highest death-rates were as follows:—The Main Reef West has a death-rate of 7·07 per 1,000. Here seven deaths were due to falls of ground and nine to accidents from explosives. All the accidents on this mine would appear to have been due to unfortunate circumstances in which the personal element played the greater part. These circumstances continued up to August, between which month and the end of the year only one death from accident took place. The Village Main Reef has a death-rate of 6·64 per 1,000 compared with 2·46 for 1916, and out of sixteen deaths ten were due to falls of ground. The falls of ground were incidental to the general broken condition of the hanging in the old mine; three of the deaths occurred while bad ground was being made safe, one was due to the deceased disregarding instructions not to go under some bad hanging, and two were caused by a fall of rock which occurred at the commencement of a movement in the hanging wall. A rock-burst caused two deaths in a south reef stope and two in a leader stope. Of the truck accidents, one death was due to the deceased being caught between his truck and a timber when attempting unaided to replace the truck on the rails, another to septicaemia resulting from an injured hand through truck derailment, and the third to the deceased being struck by a ventilating door knocked open by a truck. Of the other three deaths, one was due to tetanus following a slight injury to a finger, another to a skip overwind, and the third to a timber escaping from an over-filled timber shoot. In no case was any blame attached to the mine officials in the accident inquiry. The high death-rate must be attributed partly to the conditions at the mine, which is nearing exhaustion, and is bounded east and west and to the dip by other extensively worked mines, and partly to ill-fortune. It is, however, clear that the mine is one in which exceptional care must be exercised in avoiding accidents, and the Department has required that work be stopped in places where experience showed the danger of rock-bursts to be serious. The Jupiter's death-rate is 6·56 as against 5·30 for 1916 and out of fourteen deaths six were due to falls of ground. This mine is in a very unsatisfactory condition in places and, so far, shows no sign of improvement. The manager and the superintendent engineer of this mine have had their special attention directed to the causes of the high accident death-rate. The Glencairn Main Reef has a death-rate of 4·97, double that of the previous year, and out of six deaths four were due to falls of ground. The Village Deep has a death-rate of 4·33 per 1,000, which is an improvement on 1916, when the death-rate was 5·58. Of the deaths in 1917, explosives caused three, one being due to a misfire, one to premature return to a hang fire, and one to gassing; falls of rocks caused ten, seven of the lives being lost in two accidents, each due to falls of hanging wall close to the working face of a stope while lashing was in progress and simultaneous with earth shocks. Truck accidents resulted in two deaths, falling loose stones in two deaths, and a skip caused one death. The exceptional conditions

accounting for the high death-rate are the great depth of the mine, causing special liability to rock-bursts and to fracturing of the false hanging wall, and the dip of the reef, which is generally sufficient to make the danger from falling stones great, but not so steep as absolutely to compel frequent stulling. The mine officials are making genuine efforts to meet the special difficulties; if they were able to replace ordinary machine drills in stopes by hammer boys or by jack-hammer drills, risks to be guarded against would be greatly reduced, but it does not seem practicable to do so immediately. The Robinson Deep has a death-rate of 4·03 per 1,000, which is a slight improvement on the previous year. When the conditions of the 1917 accidents are looked into, the remarkable fact is noticed that sixteen out of the nineteen deaths were caused in shafts and winzes. Of these sixteen, three were due to falling stones and one to a descending skip, owing to an overwind, in the Chria vertical sinking shaft. Of the others, three were due to unclutched runaway skips, one to a broken winding rope, three to defective or misused signalling arrangements, four to plant while being hoisted fouling shaft timbers, and one to a rock-burst from the side of a shaft. Of the three deaths which did not occur in shafts or winzes, two were from falls of hanging in stopes at commencement of shift, entry in each case being made by the deceased without instructions, and the third from the fall of the side of a surface trench. It will be seen that so far as stoping and tramming are concerned the mine had an excellent record, which is particularly creditable in view of the depth and the conditions of the mine. The working shafts are inadequate to the needs of the mine, and owing to absence of effective shaft pillars required an excessive amount of work to keep them open for traffic. Those conditions and the fact that in many cases the accidents were found to be due to the carelessness of particular individuals go far to account for the large number of accidents in shafts, but still it seems that if closer attention had been given to the equipment of shafts and winzes and to the conditions under which persons work or travel in them, and also to the selection of careful men, some of the accidents might have been prevented.

The mines with the lowest death-rates for 1917 are:—The Wolhuter, with an average labour complement of 2,780, had a death-rate of 0·36. The Modder Deep had no deaths during 1917, and employs, on an average, 2,442 persons. The Aurora West, the Durban-Roodepoort, and the Craigie Mine also had no deaths from accidents, and although the number of persons employed by these three mines is comparatively small, great credit is due to them for keeping down accidents. The Government Gold Mining Areas, with an average labour force of 7,009, have brought down their accident death-rate from 3·96 in 1916 to 2·57 in 1917. The death-rates of the large amalgamated mines, which have such an important effect upon annual statistics, show, with the exception of Randfontein, a very satisfactory improvement. The Crown Mines, with an average labour complement of 14,559, have brought down their death-rate from 3·95 to 2·20. The East Rand Proprietary Mines, employing an average of 14,951 persons, have a death-rate of 2·68 compared with 4·04 for 1916. The Randfontein Central shows an increase in the death-rate from 3·51 to 3·81. This company as regards safety to persons has been a source of anxiety to the Department for some time past; its properties are frequently inspected, and at the time of writing a sub-inspector of mines is devoting his whole time to underground inspection. The unsatisfactory state of affairs with this mine may be accounted for by a variety of reasons: both mining methods and the class of labour employed have hitherto been unsatisfactory, and recent changes have not as yet improved matters. The property is a difficult one to work, the reefs are steep, and large areas are under pressure.

* From the Report of the G.M.E. for 1917.

(To be continued.)

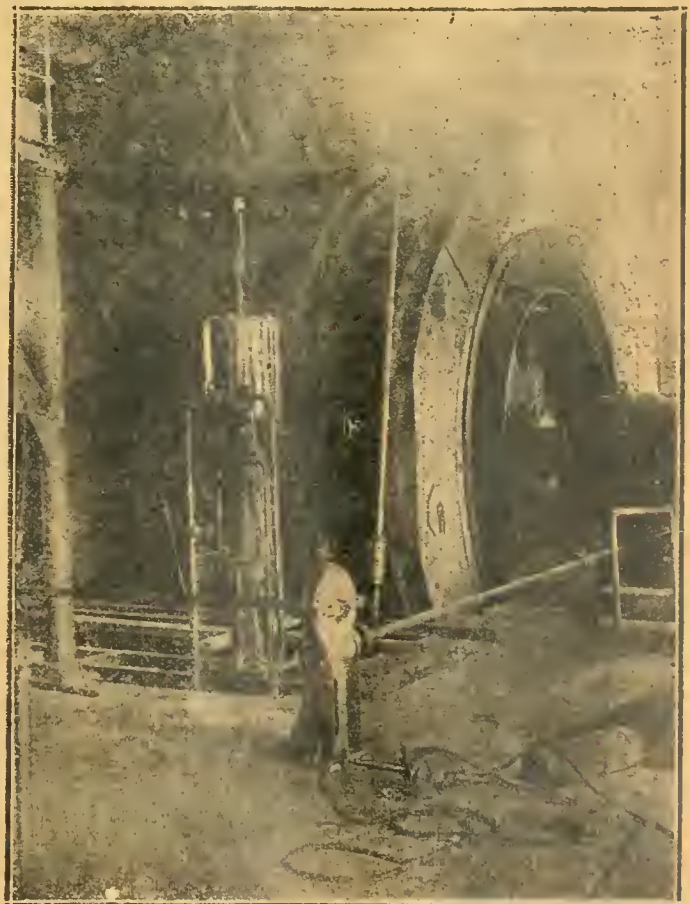
THE GOLD QUESTION IN AMERICA.

More Views of Leading Authorities—Dome Mines Close Down—Position in Canada and the States.

In the annual report of the Dome Mines, Ltd., in Canada, the manager, Mr. Charles D. Kaeding, refers to the cessation of productive operations and says: "The economic fallacy of operating a gold mine under existing conditions, even were there a sufficient supply of labour, is now so much better understood that it is hardly necessary to point out the decreasing profit per ounce of metal due to the increasing cost of production and the fixed price of this standard. It will not be possible to resume operations until conditions become more favourable." This company closed its mill in December last and is now restricting work to the sinking of its main shaft. Another company, the Canadian Consolidated Mining and Smelting Company, has issued a notice to its employees in British Columbia, stating: "Large increases in the various items entering into the mining and smelting of the Rossland ores, such as wages, cost of explosives, coke, steel, general mine and smelter supplies, without adequate compensation in values by way of increased metal prices, coupled with increased taxation, have made it necessary for the company to suspend shipments from the Rossland mines indefinitely. An endeavour will be made to keep a small force on development work, and to place the remainder of our Rossland employees at the smelter, the Sullivan mine, Kimberley, and other lead-silver properties of the company." The ore produced by the mines at Rossland is a low-grade silicious copper ore valuable chiefly for its gold content. One of the company's officials says: "A gold dollar will hardly buy half as much as before the war, there appears to be no great advantage in mining gold ores at this time—especially when almost every variety of mining cost has doubled and more."

These remarks will find a sympathetic response among gold miners elsewhere, says the *Mining and Scientific Press*. In California it is reported that the shortage of power may compel discrimination in the distribution of electrical energy, and that one of the first industries to suffer will be gold mining on the Mother Lode, on the supposition that it is not among the activities most essential to warfare. We say "supposition," advisedly, for to us it seems a fallacy to suppose that gold is not an important resource in time of war. "We don't want gold from the mines; we can make money with a printing-press," says the shallow observer, echoing a sentiment that is allowed to grow like an economic weed. Assuredly if the gold miner is to pay a double-price for his material and is to receive a half-price for his product, he will be well advised to cease production until such time as gold is in demand again; and that time is sure to come on the day of reckoning when the paper-credits now so freely issued are brought to account. The terrific slump in the commodity-value of gold is perhaps our best example of the evil effect produced by discriminatory price-fixing. In terms of drill-steel, looking at the matter from the vendor's end, 286 pounds of $\frac{3}{4}$ -inch octagonal steel would buy a shining double eagle in 1912, whereas only 80 pounds are needed now to land the same sum in the steel merchant's bank account. In this case the decrease in the commodity-value of gold has been 72 per cent., or, to state it in terms of steel, the price has risen 257.5 per cent. Compared with copper, the average price of which for many years before the War was 15 cents per pound, 133 $\frac{1}{2}$ pounds would purchase a \$20 gold-piece in 1912, while 85 $\frac{1}{10}$ pounds will capture it to-day, the corresponding percentages being 36.1 and 56.6. It will be observed that we have compared a finished product with a refined raw product. The quotations on drill-steel, however, are based upon the ingot, the price of which is fixed, while no control is exerted over the manufactured article. The price-ratio between steel ingots in 1912 and at the present time is 2.72, representing a decrease in the purchasing power of gold amounting to 63.3 per cent., much more nearly approximating the relations shown by the prices paid for copper in the two periods. Tungsten is a conspicuous example of the opportunity presented by an uncontrolled industry to advance prices to an abnormal height. Before the War the average quotation was about \$6.50 per unit of WO_3 ; the current quotation is \$24. Using our reversed view of the relation of commodities to money, 3.076 units, or 61.52 pounds, would buy \$20 in 1912, whereas 0.833 unit, or 16.66 pounds will do it to-day, the purchasing power for gold having augmented 269.2 per cent. Examples might be multiplied to illustrate the truth that price-fixation, when not based on a strictly democratic principle, exposes the restricted industries to extortion by those that are free. Gold has suddenly become altered in its relation to commerce; suddenly it finds itself among the fettered. Formerly it was the arbiter of value. Quantity of merchandise was expressed in terms of a unit-weight of this token-metal. Being the unit of reference it must be considered, for monetary purposes, as having no value in itself. The common fallacy

of a superabundant intrinsic value in gold as the thing that determines its use as a monetary standard grew out of failure to note the fact that it was just because gold was so lacking in adaptability to utilitarian purposes, while at the same time possessed of extreme beauty, density, and resistance to corrosion, that it fulfilled so perfectly the requirements of a token in commodity-exchange. Such a token by its very nature must come as near to typifying an abstract conception of measure as any material thing can do. The yard-stick that measures cotton cloth cannot safely be a piece of cotton cloth, but rather an expanded unit derived from the fundamental conception of the human energy required to produce the three barley-corns that made the inch of our grandsires. The human effort represented in the pleasing and nearly indestructible gold is at the bottom of the idea of the standard for which men will exchange the fruit of their labour. It is human-power, "man-power" in the phrase of the day, that we exchange with each other, and the gold is the symbol of it as the cross is the symbol of redemption. What would you do with the gold you receive but exchange it for something else? Would you make yourself a hoe of it, or a sword, or an automobile? Steel would be worth vastly more for any of those purposes. So, while the world crowded the busy marts, buying and selling, as there was need, and doing it in the name of the imperishable and gleaming symbol of labour, gold was the prince over industry. The moment, however, when men no longer may appraise their wares in barter on the sole basis of need, but discover the offspring of some labour bound and that of other labour free, the prince of trade himself, in whose name a value has thus been quoted falsely, becomes a slave among the bondsmen, and is delivered over to the scant mercy of the industries that have not been chained. Moreover, because value is still expressed in terms of gold, you cannot fix its own value at a higher level, for if you do the credits piled to such a dizzy height in representation of services rendered in the past, gauged as they are by this golden measure, will at a single stroke have been blotted from the account to the extent that the arbitrary weight of gold in the dollar may be changed. The basis of industrial confidence would be so shaken by it that the world would experience the calamity of a plunge into commercial and industrial chaos. There is but one way to protect both gold and general industry; and that is to build up the gold reserve faster and faster as a foundation adequate to sustain the growing national indebtedness. That indebted-



NEW HOIST AT NEW MODDER CIRCULAR SHAFT.

ness means services loaned, but the repayment must be made in currency, the only guarantor of which is the royal metal. The way to re-enthroned gold as the arbiter of commercial value is either by crystallising the prices for all commodities, or by letting all markets regulate themselves on the ancient principle of supply and demand. Half-slave and half-free it is certain that industry, commerce, banking, and insurance, will presently fall into a slough of difficulties from which we may not extricate them before appalling damage will have been inflicted not alone upon the economic life of our own day but upon that of generations to come.

Under the heading "The Position of the Gold Miners," the *Engineering and Mining Journal* says:—The unhappy position in which the gold miners find themselves need not be reviewed at length. Rather should we direct attention solely to the problem of amelioration. Everybody is agreed that something should be done, but nobody has been able to suggest anything very effective. The War Industries Board, at the request of the Secretary of the Treasury, has already declared gold mining to be an essential industry, to be granted reasonable priorities in its requirements for material, etc. This is helpful, but is far from being a cure. Congress might also be helpful in exempting gold miners from military service and exempting the industry from taxation. The levying of a war-profits tax on a gold-mining company is a painful joke. Not only are there no war profits, but soon there will be no profits at all. Exemption from taxation would be important, however, in removing the check upon prospecting. A company that has been spending its money for years in the hope of striking a bonanza cannot feel any enthusiasm over good luck in developing a bonanza in 1917 or 1918 and having to pay 80 per cent. in taxes on the profits realised in one year, which may, in truth, be only the deferred profits of many years. Many would figure that it would be far better not to hunt for bonanzas. The exemption from taxation would be, therefore the removal of a check on gold mining, even if it were not a stimulus to it. In this

connection we must think how to define gold mining. There is no question that the Rand, Black Hills, Mother Lode and Alaska mines are gold mines pure and simple. A great deal of gold is derived from such mines as Anaconda and United Verde, but nobody would class them as anything other than copper mines. But how about such mines as those of the Comstock, in which gold and silver, or gold and something else, are nearly equal elements of value? When we go beyond the helps that have been suggested above, most of the expedients for aiding the gold miners that have been proposed are dodges of the main point. The price for gold is not fixed. Commodities are exchanged for a certain quantity of gold, and it does not matter whether that be expressed in ounces, dollars, or pounds sterling. Any change in the basis of exchange would be like a modification of the yardstick. A decree that the yard should be henceforth 72 in. long, instead of 36 in., would not induce anybody to part with twice as much cotton cloth for the same money. So far the financiers of the Allied countries have kept gold from going to a premium. It is doubtful if they can maintain their position. As Hennen Jennings has conclusively pointed out, the total quantity of gold in the world is now a dangerously small percentage of the indebtedness that is payable in gold. As soon as a debtor wants gold and finds he cannot readily obtain it, he may bid for it, and gold will then be at a premium. If it be admitted that this is likely to happen, and if it be desired to get all the new gold that is possible in order possibly to avert it, a bonus on new production would not be uneconomic, providing the Government held and could continue to hold all the gold existing. Any bonus it might pay for new gold might then be chargeable to war expense. But we fear that such a project would be impracticable, if not chimerical. What would prevent dishonest miners, or quasi-miners, from buying gold as jewellery or plate, or as coin and bullion in foreign countries, and clandestinely delivering it as new gold? A general premium for gold would be quickly established. Gold miners may properly feel the pinch of conditions now affecting them, and may reasonably cry for assistance, but beyond the relatively trifling things that the Administration and Congress may do to help, the problem is one for the determination of international financiers. The question really at issue is the maintenance of the gold basis.

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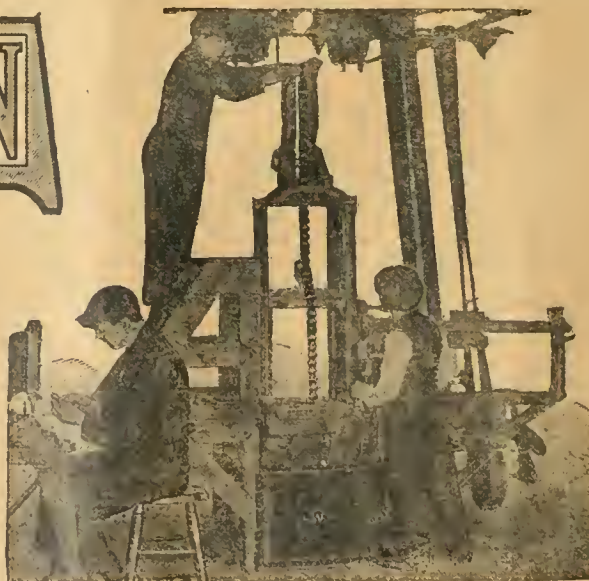
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THE AUGUST GOLD OUTPUT IN DETAIL.

Increase of 4,011 ozs.—Improved Native Labour Position.

DURING the past month the Transvaal mines produced 740,210 ozs. of fine gold, as against 736,199 in July, an increase of 4,011 ozs. The native labour position showed a slight improvement, the number of boys at work at the end of August being 179,390 as against 178,412 in July. The totals of the gold production as announced by the Chamber of Mines are as follow:—

WITWATERSRAND.		
	Ozs.	£
August	719,849	3,057,723
July	716,010	3,041,419
Increase	3,839	16,304
OUTSIDE.		
August	20,361	86,488
July	20,189	85,755
Increase	172	733
GRAND TOTAL.		
August	740,120	3,144,211
July	736,199	3,127,174
Increase	4,011	17,037

Several Rand companies show a substantial increase in their production for August, including the following:— Government Areas, £13,907; E.R.P.M., £10,182; Meyer and Charlton, £6,121; Jupiter, £6,104; Langlaagte Estate, £5,892; New Kleinfontein, £4,655; Modder B., £3,712; Knight Central, £2,774; and Nourse Mines, £2,578. The largest decrease is that of the Randfontein Central, £8,355, due to the battery having been stopped for four days owing to the recent strike. Other decreases are Simmer and Jack, £6,261; Village Main Reef, £5,866; City Deep, £5,173; Geldenhuis Deep, £4,898; Village Deep, £4,299; Crown Mines, £4,325; City and Suburban, £4,027; Modder Deep, £3,662; and Durban Roodepoort Deep, £3,555.

STAMP POSITION.

The number of stamps dropping in August was 8,879, compared with 8,894 in July, a decrease of 15.

	Rand.	Outside.	Total.
August	8,579	300	8,879
July	8,574	320	8,894
Increase	5	—	—
Decrease	—	20	15

LABOUR FIGURES.

The native labour figures for the past three months are as follow:—

	June.	July.	August.
On gold mines ...	179,028	178,412	179,390
On coal mines ...	11,473	11,790	11,950
On diamond mines	4,747	5,011	4,954
	195,248	195,213	196,294

INDIVIDUAL RETURNS.

	Value.	Increase.	Decrease.
Aurora West	£16,260	—	£89
Bantjes Con.	23,256	—	166
Brakpan	95,302	£1,159	—
City and Suburban ...	32,491	—	4,027
City Deep	106,079	—	5,173
Con. Langlaagte	56,240	633	—

	Value.	Increase.	Decrease.
Con. Main Reef	74,852	—	2,158
Crown Mines	226,994	—	4,325
Durban Roodepoort ...	1,372	—	3,555
Durban Roodepoort Deep	40,086	2,859	—
East Rand Proprietary ...	137,019	10,182	—
Ferreira Deep	68,843	—	1,291
Geduld Proprietary	65,475	—	862
Geldenhuis Deep	54,277	—	4,898
Ginsberg	13,214	131	—
Glencairn	13,695	1,097	—
Government Areas	201,933	13,907	—
Jupiter	32,665	6,104	—
Knight Central	33,532	2,774	—
Knights Deep	73,813	200	—
Langlaagte Estate	61,732	5,892	—
Luipaardsvlei	23,286	841	—
Meyer and Charlton	41,857	6,121	—
Modder B.	115,334	3,712	—
Modder Deep	85,706	—	3,662
New Goch	16,880	569	—
New Heriot	16,719	—	1,198
New Kleinfontein	76,752	4,655	—
New Modder	165,848	561	—
New Primrose	16,600	323	—
New Unified	12,781	297	—
Nourse Mines	56,826	2,578	—
Princess Estate	25,491	—	102
Robinson	49,728	373	—
Randfontein Central	164,120	—	8,355
Robinson Deep	64,485	752	—
Roodepoort United	24,909	1,342	—
Rose Deep	64,128	—	1,835
Simmer and Jack	65,394	—	6,261
Simmer Deep	47,158	1,159	—
Springs Mines	87,546	1,402	—
Van Ryn	35,498	985	—
Van Ryn Deep	105,178	616	—
Village Deep	71,154	—	4,299
Village Main Reef	28,851	—	5,866
West Rand Consolidated...	36,781	467	—
Witwatersrand	41,224	—	174
Wit. Deep	38,650	—	1,695
Wolhuter	38,990	—	1,661
Miscellaneous	11,219	6,375	—

OUTSIDE DISTRICTS.

Sub Nigel	28,060	1,814	—
Barrett	1,036	—	213
Glynn's Lydenburg	9,307	—	80
Transvaal G.M. Estates ...	23,881	404	—
Miscellaneous	24,204	—	1,192

GROUP PROFITS.

	June.	July.	August.
Central Mining	£336,121	£330,765	£302,300
Barnato	180,141	188,103	186,284
Gold Fields	33,924	28,247	30,076
General Mining	40,791	26,615	32,877
Mines Selection	74,982	70,487	70,844
Goerz	68,018	69,237	65,818

MONTHLY RETURNS.

	Ozs.	Value.
January	714,182	£3,033,653
February	659,759	2,802,477
March	696,281	2,957,614
April	717,099	3,046,045
May	741,317	3,148,915
June	727,696	3,091,058
July	736,199	3,127,174
August	740,210	3,144,211

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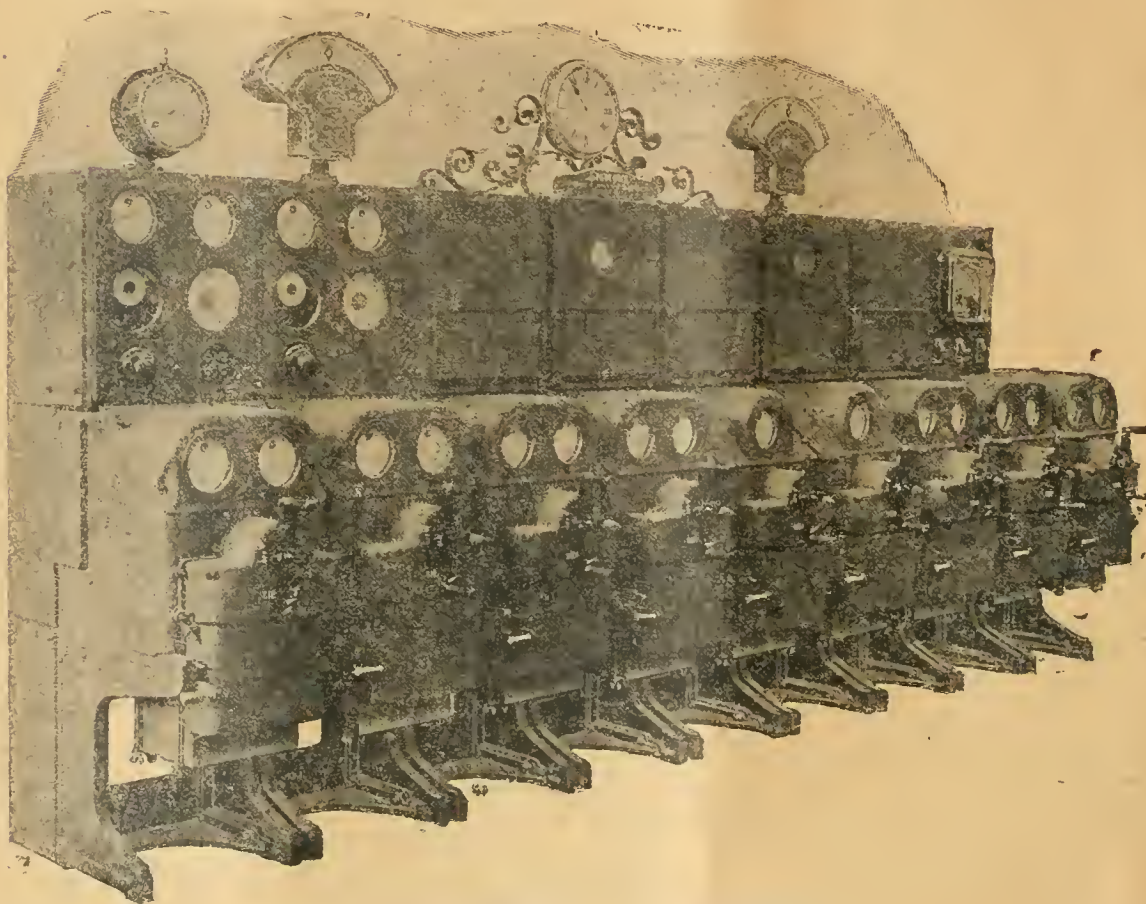
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THE AUGUST GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of August:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
Bantjes Cons.	90	3	19,500	5,475	*£520	23/11.0
City Deep	A154	9	57,500	24,973	34,306	24/ 2.7
Cons. Main Reef	220	6	53,150	17,504	10,140	23/ 9.0
Crown Mines ...	660	26	161,000	53,342	40,159	22/ 8.2
Dur. Rood. Dp..	100	3	25,500	9,437	2,594	28/ 8.8
East Rand Prop.	600	23	113,000	32,257	1,926	23/ 5.0
Ferreira Deep ...	280	7	38,900	16,207	23,494	22/ 7.9
Geldenhuis Deep	300	7	43,400	12,778	*5,495	27/ 0.3
Knight Central ..	120	3	24,250	7,894	2,047	25/ 6.1
Modder B.	B104	8	58,000	27,152	60,015	18/ 3.1
New Modder ...	C236	15	72,000	39,044	90,174	20/ 2.8
Nourse Mines ...	180	5	43,100	13,378	3,133	24/ 4.4
Robinson	180	6	41,300	11,707	9,270	19/ 1.8
Rose Deep	300	7	54,000	15,097	14,031	18/ 0.7
Village Main R.	130	4	21,500	6,792	2,813	23/ 8.7
Wolluter	120	4	33,450	9,179	4,422	20/ 2.6
Village Deep ...	180	7	48,800	16,751	9,274	24/ 9.0
Wit. Deep	200	5	33,130	8,988	517	22/ 1.5

Tls. & averages 4154 148 941,480 327,955 302,300 22/ 7.3

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.
C Includes 56 Nissen stamps.

* Loss.

City Deep, Ltd.—Decreased profit due to falls of ground referred last month's cable restricting ore output from upper section. This now been rectified.

Geldenhuis Deep, Ltd.—Decreased profit due to breakdown referred to in cable 28th August. Hoist now in service again.

Ferreira Deep, Ltd.—Reduced tonnage due to temporary interference with hoisting in No. 1 shaft.

Village Main Reef, Ltd.—Decreased profit due earth tremor referred to in cable 22nd August. Disorganisation now adjusted.

Goerz Group.

Results of operations on the producing mines of this group for the month of August:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	45,600	£66,104	28/11
Modder Deep Levels ...	70	44,200	85,482	38/ 8
Princess Estate	60	18,400	25,569	27/10
Totals	230	108,200	177,065	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£45,485	19/11	£20,529	9/ 0
Modder Deep Levels ...	38,345	17/ 4	47,137	21/ 4
Princess Estate	27,417	29/10	*1,848	2/ 0

Totals £111,247 — £65,818 —

* Loss.

Barnato Group.

The results of operations of the Barnato group for August are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	43,000	£56,239
Giusberg	75	13,870	13,214
Glencairn	160	20,000	13,694
Government Areas	200	118,500	201,936
Langlaagte Estate	200	49,000	61,734
New Primrose	90	18,400	10,601
New Unified	60	13,600	12,780
Randfontein Central	600	137,000	164,119
Van Ryn Deep	90	48,300	105,180
Witwatersrand	215	36,350	41,225
Totals and averages ...	1790	498,020	£686,722

July totals 1780 506,610 £672,338

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ..	£41,374	19.244	£15,038
Ginsberg	12,780	18.429	530
Glencairn	12,654	12.654	1,246
Government Areas	117,214	19.783	85,271
Langlaagte Estate	46,885	19.135	15,002
New Primrose	15,128	16.443	1,543
New Unified	10,133	14.902	2,680
Randfontein Central	161,957	23.643	2,950
Van Ryn Deep	51,066	21.145	55,000
Witwatersrand	35,674	19.628	7,024
Totals and averages ...	£504,865	20.275	£186,284

July totals £488,867 19.299 £188,103

Monthly Gross Profit for 1918.—January, £190,628; February, £159,225; March, £136,496; April, £164,186; May, £179,975; June, £180,141; July, £188,103; August, £186,284.

Randfontein Central, Ltd.—Reduced profit due to strike of reduction workers, causing stopping of milling for four days and consequently reduced tonnage treated.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of August, 1918:—Tons crushed, 4,110, yielding 2,191 fine ozs.; estimated value of month's output, £9,112; estimated profit for the month, £3,451.



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Consolidated Mines Selection Group.

The following are the results of operations for the month of August:—

	Stamps Working.	Tons Milled.	Working Cost per Ton Milled
Brakpan Mines ...	110	55,000	23/ 2-311
Springs Mines ...	80	41,170	22/ 4-923

Totals and Averages ... 190 96,170 22/10-292

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines...	£94,273	34/ 3-371	£30,493	11/ 1-060
Springs Mines ...	86,482	42/ 0-148	40,351	19/ 7-225

Totals & averages £180,755 37/ 7-089 £70,844 14/ 8-797

Albu Group.

The August operations of the producing mines of this group were as follows:—

Company.	Stamps.	Tons Crushed.	Total Cost.
Aurora West ...	80	14,350	£15,208
Meyer and Charlton ...	75	11,320	15,956
New Goch ...	80	18,600	16,593
Roodepoort United ...	80	26,468	27,484
Van Ryn Estate ...	160	32,800	28,800
West Rand Consolidated ...	100	32,150	34,806

575 135,688 £138,847

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	21-20	£16,126	£918
Meyer and Charlton ...	28-19	41,268	25,312
New Goch ...	17-84	17,118	525
Roodepoort United ...	20-77	24,993	*2,491
Van Ryn Estate ...	17-56	35,379	6,579
West Rand Consolidated ...	21-65	36,840	2,034

£171,724 £32,877

* Loss.

Roodepoort United.—Loss due to exceptionally low grade.

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Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of August of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs	Total Profit
Simmer and Jack ...	320	7	59,800	15,395	£11,687
Robinson Deep ...	110	8	47,000	15,181	1,144
Knights Deep ...	400	11	86,400	17,817	3,028
Simmer Deep ...	220	10	45,800	11,102	54
Jupiter ...	80	5	24,200	7,690	4,827
Sub Nigel ...	30	2	9,700	6,606	9,336

Totals ... 1160 43 272,900 73,791 £30,076

The sundry revenue included in the above total declared profit is as under: Simmer and Jack, £1,500; Robinson Deep, £154; Knights Deep, £416; Simmer Deep, £860; Jupiter, £563; Sub Nigel, £38; total, £3,531.

Gold Reserve.—Simmer and Jack, 1,400 ozs.; Knights Deep, 341 ozs.; Sub Nigel, 2,991 ozs.; total, 4,732 ozs.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of August, 1918:—Central Mines: Tons crushed, 11,600; yielding 4,037 fine ozs. Elandsdrift Mine: Tons crushed, 1,540; yielding 1,000 fine ozs. Vaalhoek Mine: Tons crushed, 1,900; yielding 583 fine ozs. Estimated value of month's output, £23,326; estimated profit for the month, £3,924.

THE WEEK IN THE SHAREMARKET.

A Record Market—Decline and Dulness.

SATURDAY, being the Jewish New Year, the Stock Exchange was closed. Monday's opening was made lively by active business in Modder East. Large quantities of the stock changed hands at 22s. 6d. up to 22s. 10½d. The three-year Options made from 7s. to 7s. 2d. and the four-years 8s. to 8s. 2d. West Springs were also in good demand and were dealt in at from 24s. 6d. to 25s. 3d., and the Options at 9s. 9d. to 10s. Government Areas touched 89s. 6d., but receded to 89s. Springs reached 72s., finishing 71s. 9d. and sellers. The call was the biggest in volume since the war began, no less than 47 sales being recorded, and the transactions in the better class of goods of no small dimensions. Van Ryn Deeps at 73s. were appreciably better. Sub Nigels, after recovering from their last setback, with sales at 27s. 6d., fell away 6d. The Modder East lot kept at their opening figure, while the high-priced trio of that ilk were all harder. In the small stocks Princess Estates were in active demand. The pace, however, had been made too hot and the sudden rise tempted sellers to come in, with the natural effect of bringing prices down all along the line. This went on gradually to the close, when Modder Easts were done at 22s. 6d.; Government Areas at 88s. 6d.; Springs at 71s. 3d.; African Farms at 16s. 4d. In outside stocks Sakalavas came out of their retirement once more, rising to 12s. 6d. Tuesday, instead of bringing relief, accentuated the downward tendency. At the opening, there was active dealing in Modder East at between 22s. and 22s. 3d. with a subsequent drop to 21s. 9d. The Options receded in sympathy. At the call the whole list was marked down, with the exception of Pretoria Cements, T.G.M. Estates, Randfonteins and City Deeps, which were all to the good. Modder Deeps, New Modders and Glynn's Lydenburgs remained unchanged. On Wednesday morning the market, after a dull close, opened without any show of improvement which was confirmed at the call, when prices generally fell away still further. There was, however, no great anxiety to sell and no slaughter of innocents. A bid of 86s. for Meyer and Charlton was accepted without discussion, an exceptionally low figure for a stock that has rarely been below £5 except just when ex dividend. There was slightly more business at Thursday's call without any change in prices worth mentioning. The transactions in outside stocks for the week were:—Sales: West Springs, 25s. 3d. to 24s. 9d.; Options, 10s. 6d. to 10s. 3d.; Monteleos, 32s. 6d.; Sakalavas, 12s. 6d. to 11s. 6d.; Union Tins, 4s. 11d. to 5s.; Henderson's Options, 10d. Buyers and sellers: Phoenix, 11d.—1s.; Union Mica, 9s.—10s.; New Farms, 2s. 1d., buyer.

There was practically nothing doing at the opening on Friday and business was considerably reduced at the call. The following are the changes in prices:—Sales: City and Suburban, 7s. 6d.; Dagga Options, 5s.; Hume Pipes, 32s. 6d.; Leeuwpoots, 37s.; Lace Props, 11s. 7d.; Modder Easts, 22s.; three-year Options, 6s. 9d.; four-year Options, 7s. 9d.; Pretoria Cements, 73s.; Roodepoort U.M.R., 3s. 6d.; Bush Tins, 11d.; Van Ryn Deeps, 71s. 9d.; New State Areas, 19s. 9d.; Zaaiplaats, 17s. 7d. Buyers and sellers: Brakpans, 75s. 6d.—78s.; Clydesdales, 18s.—18s. 6d.; Kleinfonteins, 14s. 9d., seller; Rooibergs, 11s.—11s. 6d. In the light of subsequent events, it looks uncommonly as if the boom of last Monday had been carefully engineered. Certainly the news from the front was good and justified a degree of buoyancy, but it has continued satisfactory ever since and prices have sagged and business is reduced to a third of its volume. It is perfectly certain that the movement in question did not originate from the big houses.

	Fri. 6th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thurs. 12th.
African Farms . . .	16 2	16 6	16 0	15 10*	15 5
Anglo-Amer. Corp. . .	—	—	33 6†	33 6†	33 6†
Apex Mines	7 0*	7 0	7 3	7 3*	7 3
Aurora Wests	—	—	—	9 0*	9 0*
Bantjes Cons.	2 11*	3 3	3 3	3 0*	3 1
Brakpan Mines	78 6†	79 0†	75 0*	75 0*	78 0†
Brick and Potter.	3 9*	—	3 9*	3 9*	3 9*
Bushveld Tins	0 10†	1 0	0 10*	0 9*	0 9*
Cassel Coals	—	30 0†	30 0†	30 0†	30 0†
City and Subs.	7 0*	7 9	7 0*	7 0*	7 3*

City Deeps	51 0	51 6†	52 6	51 6*	50 0*
Cloverfield Mines	9 0*	9 6	8 9*	8 6*	—
Clydesdale Colls.	17 3*	17 3*	17 3*	17 3*	17 3*
Concrete Construc.	5 9	5 6*	5 6*	5 6*	5 6*
Con. Investments	19 6*	19 6*	19 9*	19 9*	19 9*
Con. Langlaagtes	19 6	—	19 6	19 0*	—
Con. Main Reefs	12 6*	12 6A	12 6	12 6	12 6*
Con. Mines Selec.	25 9*	25 6*	25 6*	25 6	25 6*
Coronation Colls.	40 0*	40 0*	40 0*	40 0*	40 0*
Coronation Frees.	1 2*	1 5	—	1 2*	1 4
Coronation Synd.	—	—	1 6	2 0	2 0†
Crown Diamonds	4 0*	4 0*	4 0*	4 0*	4 0*
Crown Mines	—	41 3*	40 0*	40 0*	40 0*
Crown Mines Debs.	£99*	£99*	£99*	£99*	£99*
Daggafontein Mines	24 6	24 0*	24 6	23 0*	23 3*
Do. Options	5 6	5 3*	5 3	5 3	5 3†
Durban-Rood.	10 0*	10 0*	10 0*	10 0*	10 0*
East Rand Coals	2 2*	2 2	2 3*	2 3*	2 2*
East Rand Deeps	0 11*	1 0	0 11*	0 11*	0 11
E.R. Minings	17 6	17 6*	17 0*	17 6*	18 0†
East Rand Props.	4 9	4 9*	4 6*	4 0*	4 6*
East Rand Debs.	£60*	£60*	—	£60*	£60*
Eastern Golds	1 3*	1 4	1 1	1 3*	1 3*
Frank Smith Dias.	3 1*	3 1*	3 3*	3 1*	3 2*
Geduld Props.	37 9	38 3	37 9*	37 9*	37 9*
Glencairns	—	—	2 0†	—	—
Glencoe Colls.	6 0*	6 0*	6 0*	6 0*	—
Glynn's Lydenburgs	26 0	26 0*	27 6†	27 0†	26 0*
Govt. Areas	87 0	89 0	87 9	87 0	87 9
Jhb. Bd. of Execn.	27 6*	27 6*	27 6*	27 6*	27 6*
Jupiters	4 3†	4 3	3 11*	4 0*	3 9*
Klerksdorp Props.	2 10*	2 10*	2 10*	2 10*	—
Knight Centrals	—	4 8	4 6*	4 6	4 3*
Lace Props.	11 9	12 3	12 0	11 9	11 9
Leeuwpoot Tins	38 0*	38 9	37 9*	38 0	36 0*
Lydenburg Farms	9 6	9 8	9 5	9 1*	9 2*
Main Reef Wests	2 10*	2 10*	2 10*	2 10*	2 10*
Meyer and Charltons	—	—	—	86 0	86 6*
Middelvel Est.	—	—	1 3*	1 6†	—
Modder B.'s	163 6	164 0	162 6*	162 0*	162 0
Modder Deeps	147 0	148 6	149 0	148 6*	149 0
Modder Easts	21 9	22 9	21 10½	21 6	21 6
Do. Options (3yrs.)	6 3	7 0	6 7	6 4*	6 4*
Do. Options (4yrs.)	7 9	8 1	7 8	7 3*	7 7
Hume Pipes	33 3*	33 0	31 0	31 0*	33 0*
African and Europ.	—	12 0*	—	12 0*	12 0*
Natal Navig. Colls.	18 9*	18 9*	18 9*	19 0*	19 0*
National Banks	—	£13½*	—	—	£14†
New Boksburgs	1 1†	—	0 9*	—	—
New Eland Dias.	24 0*	24 0*	24 3*	—	24 0*
New Era Cons.	10 1*	10 3*	10 3*	10 0*	10 0
New Geduld Deeps	5 10*	5 10*	5 10*	5 10*	5 9*
New Heriots	12 6*	12 9*	—	12 0*	12 6
New Kleinfonteins	15 0	15 4½	15 3	14 9*	14 9*
New Modders	£25½	£26	£26A	—	—
New Primrose	—	3 0*	3 6*	4 0*	4 0*
New Unifeds	—	—	—	5 6*	5 6*
Nigels	—	4 6*	4 6*	1 6*	—
Nourse Mines	17 6	17 6*	17 6*	17 6*	17 6*
Premier Prefrs.	146 0*	—	145 0*	145 0*	—
Pretoria Cements	70 0A	71 0	71 0	71 0A	73 6
Princess Estates	4 0	4 2	3 10*	3 7*	3 9
Rand Colls.	3 9†	3 9†	—	—	—
Rand Klips	10 0	10 6	10 6†	—	—
Rand Nucleus	1 6†	1 4*	1 4*	1 4*	1 4*
Rand Select Corp.	—	88 9	—	—	—
Randfontein Deeps	4 3*	4 1*	4 4*	4 3*	4 3*
Randfontein Est.	13 9*	14 0	15 0	15 0*	15 0
Roberts Victors	6 0*	6 0*	6 0*	6 0*	—
Rooibergs	11 9*	12 0	11 9*	11 6*	11 6
Roodepoort Un.	—	3 6*	—	—	3 6*
Ryan Nigels	2 6*	2 9*	2 9*	2 6*	2 7*
Shelias	—	1 6†	—	1 3†	—
Simmer Deeps	—	1 9*	—	1 9*	1 9*
S.A. Breweries	—	28 0*	—	27 6*	—
S.A. Lands	6 9	7 0	6 10*	6 9*	6 8
Springs Mines	70 9	71 9	71 0	70 3	70 3*
Sub Nigels	26 3*	27 3	27 0	26 9	26 6*
Swaziland Tins	31 0*	33 6†	33 6†	—	—
Transvaal Lands	21 0†	20 6*	20 0*	20 0*	20 6*
Transvaal G.M. Est.	16 3*	16 9	17 9	18 0*	17 3†
Van Ryn Deeps	71 3	73 9	71 9*	71 9*	71 6*
Village Deeps	—	—	—	16 0*	15 0*
Welgedachts	27 6†	27 6	—	—	—
Western Rand Est.	2 6*	2 6*	2 9	—	—
Witwatersands	—	21 0†	21 0†	21 0†	21 0†
Wit. Deeps	—	—	9 0†	8 0*	9 0†
Wolhuters	4 0*	4 0	4 0†	3 9*	3 9*
Zaaiplaats Tins	18 5	18 9	18 4	18 1	18 2
Union 5 per cent.	—	£103½	£103½*	£103½*	£104
New States	20 9	21 0	21 0†	20 0	20 0
S. Van Ryns	13 9*	14 6	14 3	14 3	14 3*
Do. Options	1 7*	1 8	—	1 6*	1 7
S.A. Alkali	45 0	45 0	42 0*	42 0*	41 0†

*Buyers. †Sellers. †Odd lots. †Ex London.

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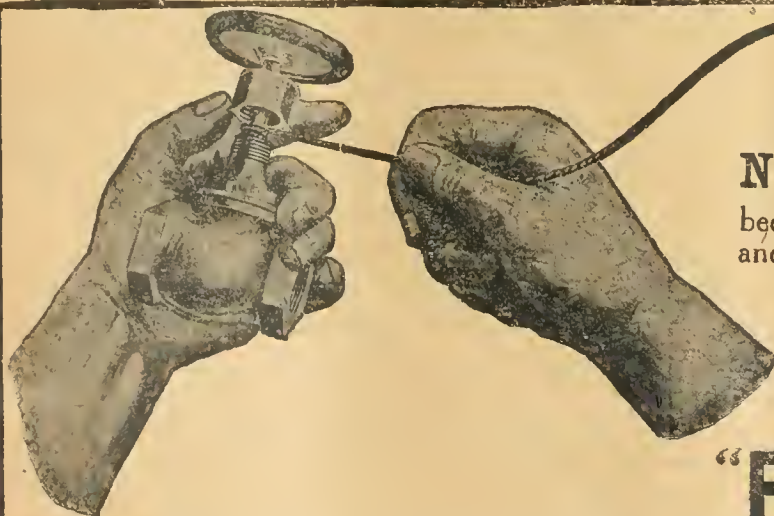
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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Congress of Chambers of Commerce—After-War Problems—British Commissioner's Wishes—Iron and Steel—Wire Nails' Record Price—Builders' Sundries' Record for August—Trend of Business.

THE Commercial Congress at Durban has been followed by the commercial community with more than the customary interest, as it may be the last before the war is over—who knows? In this respect a responsible merchant in Johannesburg remarked that if one only knew or could form a fairly correct view of what would happen after the war he could make a big fortune. As we go along there will be some outstanding features to assist in many cases for forming an opinion. The next to discuss the subject was a commercial broker. He had a decided opinion as regards the confectionery and sweet trade, which had been done so well in South Africa that it will hold its own against oversea competition after the war. It may be that a few of the more luxurious varieties for Christmas will be imported, but for the everyday demand the South African manufacturers will hold their own, even without an additional protective duty. Again, a Johannesburg manufacturer whose factory is now engaged almost solely for mining work states that we can never expect a protective duty as large as the present war conditions give, therefore what will happen in his case he can at present merely guess at. As regards oversea manufactures Mr. Wilson Goode, the British Trade Commissioner, stated at the Conference that the British Government was anxious to obtain information as to the requirements of merchants after the war as regards stocks, and emphasised that it was to the interests of merchants to give this information because if, for instance, a firm proposed to

commence manufacturing after the war he would pass on the information to the Imperial Government, and steps would be taken to grant shipping space for that machinery as soon as possible. The Home Government was trying to forecast what would be the probable requirements in order to provide employment for the men of the Army on demobilisation, and it was likely that if they had a forecast of requirements they would take the risk of manufacturing before the actual orders were placed. He hoped that members of the Congress would realise the necessity of trying to give a forecast of their probable requirements. There is yet time to do something before the end of the war, as we have the authority of Lord Buxton, who made the following public remarks at Benoni on Wednesday last: "The war would possibly be further prolonged, but the bad times and the moments of depression had, thank God, passed, for now the tide had turned, and they could feel more sanguine of the ultimate victory. The task was, of course, a hard and serious one, but with America's great strength they could hope for the best."

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been so many orders placed without actual results in America and Canada that many people cannot order afresh. There are quantities awaiting on the New York wharves already for shipment, that cannot be had, also there are quantities at the various manufactories already paid for or with a bank guarantee, therefore such cannot be cancelled, so the materials simply remain because transport cannot be obtained. Wire nail values are similar to bar iron, as so much depends upon sizes; for example, a keg of 1½ in. steel ceiling nails were sold at 175s. per 100 lbs. during this week, being quite a record price even for Johannesburg. Business is good in the iron and steel trade, as the enquiries are from all parts of South Africa for the different kinds of the small sizes of iron and mild steel. The moulders' strike may soon adversely affect portions of the iron trade, as an early settlement is not promising, at least that is the opinion of an authority on the present position.

TIMBER AND BUILDERS' SUNDRIES.

There is practically no alteration in prices, excepting that clear pine went up a penny per foot and poplar 3d. Even prices are not any too certain for assorted orders, as much more business is taking place between merchant and merchant to make up such orders. In one instance it made a farthing extra per foot as a certain line had to be obtained from outside the yard, and then two other yards had to be requisitioned to complete the order. At present one cannot describe the Johannesburg timber trade as one of shortage, but undoubtedly the different yards stocks are not so well assorted as they were. A leading builders' ironmongery warehouse had a record month for this year, in August last. The Johannesburg trade, according to the actual figures, did not turn out so well, but it was more than recompensed for by the country and reef orders. There are still marvellous stocks of builders' ironmongery, sanitary ware, and all similar requirements to finish off good houses. And there are some good houses being finished off, especially now that the architects use the various South African woods to advantage in permanent fixtures and decorations.

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THE TREND OF BUSINESS.

Business is very quiet on the Commercial Exchange, and it is not too good generally. However, the feature is the extra demand from the country districts, assisted by the Fat Stock Show last week. The farming visitors patronised the agricultural implement dealers in town quite freely, and although stocks are not so great and as well assorted, yet substitutes have been readily accepted. Quite a lot of second-hand machinery, rails and trucks have been taken off our market for Kimberley; obviously this is because of mining machinery and equipment being so short at Capetown, the natural port for that district. Not much has been said in reference to the promised Commercial and Industrial Bank, but the manufacturing and trading communities are keenly anxious for the details of the new financial scheme under the aegis of the National Bank.

OILS, COLOURS, WHITE LEAD, ETC.

Linseed oil is fairly plentiful, but we may have to wait a while for the expected shipment from India. Boiled linseed oil is not so abundant as the raw kind, therefore a rise in that price is reasonably anticipated. Turpentine is only available in retail quantities. It is said that some may come from New York in the petrol ship, but even that ship is problematical for the time being, or at all events the shipping people cannot, or do not desire to, give information. About a third motor petrol is supplied through the permit office as asked for. Paraffin is still acutely scarce and most difficult to obtain unless one is a recognised customer of a retail store, which has a small allotment occasionally from the only one distributing house left with any. It is difficult to ascertain the price of a stray tin of paraffin when obtainable, as neither buyer nor seller are communicative on that subject, as they are not looking for trouble from the Government, which has issued a maximum price list.

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VARIOUS TRADE ITEMS.

Salad oil is 140s. per case of 2-4's for the best and 90s. for seconds. Olive oil, 30s. per gall. for best and 25s. for seconds. Brasso is very scarce. A cable from America anticipates easier shipping conditions shortly. However, other American importers do not quite agree with that, especially as regards the steam shipping position. It is generally known that cables are constantly arriving from New York asking for shipments to be permitted in schooners instead of steamers. Messrs. F. Myers & Co., Ltd., has purchased the stores and balance of stock of Messrs. Thienhaus & Watson, Ltd.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 2s. to 2s. 1d.; flooring, $4\frac{1}{2}$ x $\frac{3}{4}$ and 6 x $\frac{3}{4}$, 11d. to 11 $\frac{1}{2}$ d. per sq. ft.; ceilings, 6 x $\frac{1}{2}$, 7d. to 7 $\frac{1}{2}$ d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. to 9s. 6d. per cub. ft.; clear pine, $\frac{1}{2}$ in. x 12in., 1s. 6d. per foot; 1in. x 12in. 2s.; teak, 25s. to 26s. per cubic foot; shelving, 1s. 3d.; Jarrah, 13s. 6d. c. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 2s. to 2s. 1d. ft.; beaver boards, 11d.; galvanised iron, 24 gauge, 6ft. to 10ft., 2s. 2d. to 2s. 3d.; 11ft., 2s. 3d.; 12ft., 2s. 3 $\frac{1}{2}$ d.; 26-gauge, 6ft. to 8ft., 1s. 10d.; 9ft. and 10ft., 1s. 11d.; flat galvanised, 24 and 26-gauge, 110s. 100lb.; floor brads, 90s.; ceiling, 75s.; wire nails, 75s. to 130s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 9s. 3d. bag; 8s. 3d. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 65s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £27 10s. per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 8s. 6d. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. to 15s. O.M. gallon; white lead, 1s. 6d. per lb. and 1s. 3d. in big lots; turpentine, 110s. 2/4 1-5 galls.; 10—1's; 5-6 imp. tins, 120s.; oxide in oil, 60s. per 100 lb.; dry oxide, 13s. 6d. to 16s.; linseed

oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, $\frac{1}{4}$ in., 8s.; do., mirror, 8s. 6d.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £37 $\frac{1}{2}$ local, £31 to £31 $\frac{1}{2}$ per ton; tallow (local), 8 $\frac{1}{2}$ d. per lb.; paraffin quotations unobtainable; petrol, 37s. 6d. to 38s. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 42s. 6d. per case; cylinder, 37s. 6d. to 42s. 6d.

CHEMICALS.—Mercury, £40 75lb.; bichromate potash, 5s. 6d. 15; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11b.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; nitrate (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6 $\frac{1}{2}$ d. lb.; plumbago crucibles, 6 $\frac{1}{2}$ d. per number; carbide, 100s. to 110s. 100 lb.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 60s. to 65s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20, 130s. 7/18, 170s.; tubing, 40s. to 45s. per 100ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3 $\frac{1}{2}$ in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, $\frac{1}{2}$ in. and 3-16in. round iron, 95s. to 100s.; $\frac{1}{2}$ in. do., 85s.; $\frac{1}{2}$ in. steel, round, 80s.; $\frac{1}{2}$ in. round iron, 75s.; do. steel, 72s. 6d.; $\frac{1}{2}$ in. round iron, 72s. 6d.; do. steel, practically none in town; $\frac{1}{2}$ in. round iron, 65s. to 67s. 6d.; $\frac{1}{2}$ in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100lbs. Vereeniging mild steel also 45s. per 100lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, $\frac{1}{2}$ in. diameter, 2s. to 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; $\frac{1}{2}$ in. diameter up to 3in. long, 1s. 9d. lb.; $\frac{1}{2}$ in. dia., 1s. 6d. 3 $\frac{1}{2}$ in. and up long 1s. 6d. lb.; $\frac{1}{2}$ in. dia. up to 2 $\frac{1}{2}$ in. long, 77s. 6d. 100lb.; $\frac{1}{2}$ in. dia. and 2 $\frac{1}{2}$ in. up long, 75s. per 100lb.; $\frac{1}{2}$ in. diameter up to 2 $\frac{1}{2}$ in. long, 85s. per 100lb.; $\frac{1}{2}$ in. dia. 2 $\frac{1}{2}$ in. and up long, 60s. per 100lb.; $\frac{1}{2}$ in. diameter, 2 $\frac{1}{2}$ in. and up long, 55s. 100 lb.; $\frac{1}{2}$ in. and 1in. diameter, same price as $\frac{1}{2}$ in. diameter; nuts, $\frac{1}{2}$ in., 1s. 3d. per lb.; $\frac{1}{2}$ in., 85s.; $\frac{1}{2}$ in. 95s.; 1 $\frac{1}{2}$ in. and 1 $\frac{1}{2}$ in., 85s.; 1 $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 45s.; rivets, 3-16in., 1s. 6d. lb.; $\frac{1}{2}$ in., 5-16in., 1s. 6d. lb.; 7-16in., $\frac{1}{2}$ in., 1s. 3d. lb.; $\frac{1}{2}$ in., 75s. to 80s.; $\frac{1}{2}$ in., 72s. 6d.; $\frac{1}{2}$ in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s. 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5 $\frac{1}{2}$ d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

Lace Proprietary Mines, Ltd.

(Incorporated in the Transvaal).

NOTICE TO SHAREHOLDERS.

The reduction of Capital to £127,500, and increase of Capital up to £255,000, being now completed, Shareholders are requested to surrender their Share Certificates to be exchanged for new Certificates at the rate of one for two. Applications can now be made for the new issue of 127,500 shares by Shareholders who were registered on the First Day of August, 1918, or by persons in whose favour they have renounced. Forms of application are obtainable at the office of the Company, and will be posted to Shareholders.

Applications must reach the undersigned not later than 5th December, 1918, after which date no applications will under any circumstances be entertained.

By Order of the Board

O. F. BROTHERTON,

(For the Witwatersrand Township Estate and Finance

Corporation, Ltd., Secretaries).

Head Office: The Jeppe Arcade, Commissioner Street (P.O. Box 5036), Johannesburg

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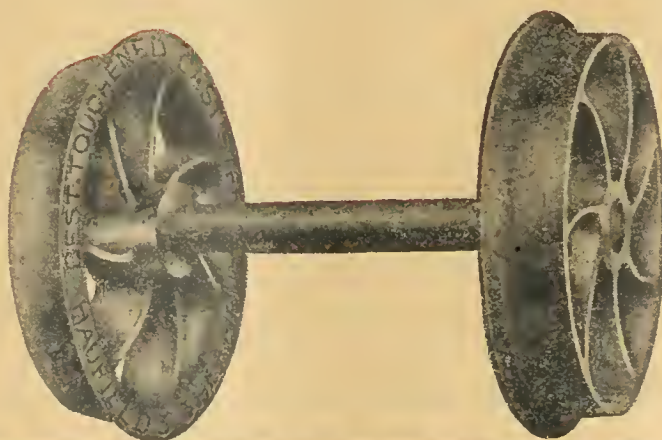
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Engineering Notes and News.

CANVAS TUBING FOR MINE VENTILATION.*—II.

By LESTER D. FRINK.

In the crosscut some difficulty was experienced with the leading length until a successful blasting-piece was made. This piece was made up with harness snaps fastened to ears sewed to the hem of the tubing so that it might easily be put up or taken down. Before spitting a round of holes, this piece was detached and carried back to a safe place. This would leave the discharge far enough away from the breast to be safe from flying rocks and the effects of concussion, and still close enough so that the smoke would be driven out quickly. When the next shift came on, they would replace the blasting-piece so that the air might blow directly on them. On the 3,000-ft. level in a drift we are able to supply good air to the breast with a No. 2 Sirocco fan blowing through about 500 ft. of 10-in. tubing. In this length there was one place where the water ran on the tubing in streams. The canvas showed no ill effects from the bath. The cost per linear foot of driving was reduced about 50 per cent. in this drift, and no difficulty was experienced in keeping men. It was here learned that air-motion was a great factor in making favourable working conditions. There was but a slight difference in the temperature and humidity of the air as it blew on to the men and that of the drift 50 ft. back where the air velocity was slow, still the men felt comfortable and could work at the breast, whereas little could have been accomplished if the work had to be done 50 ft. back. One miner, in referring to this fact, said he could easily understand it, for when a day was hot and unbearable if he went out in his "auto," as soon as he got up a little speed, he was cool enough. It would be hard to get the men to move as fast as that underground, but the air can be made to move, as is attested by velocity readings of 4,000 to 5,000 per minute recorded at the discharge of most lines not over 500 ft. long. On the 3,400, and 3,600 levels, considerable use has been made of the canvas tubing in blowing to the breasts of the crosscuts. The rock temperatures on those levels are quite high, being 100 deg. F. at the 3,200, 102 deg. at the 3,400, and 104 deg. at the 3,600. As yet a separate fan has not been put on each of these levels. All the air is supplied by a No. 6 Sirocco fan blowing from the 3,000-ft. level. An air-box has been placed in one corner of the pump-compartment of the shaft. At each level, part of the air is taken out and direct connection is made to the flexible tubing that runs to the breast of the crosscut. These headings have advanced about 300 ft. on each level. In spite of the high rock-temperatures, the working conditions at the breast have been kept comfortable. By having at each working place a number of short lengths, the men can bring the leading pieces as close to them as they wish. When the short lengths are all in use, a long length is sent down to take their place. This order of changes is repeated time and again as the work progresses. Ten and 12-in. tubing is used on these levels. We have found that the tension-rings, used in connection with the clamp that grips the wire, and, of course, the clamp too, are not necessary on the smaller tubing. When they are not used, the clips that are bent around the messenger-wire to support the tubing must be tightened carefully. Considerably more care must be exerted in the use of the canvas tubing for ventilating raises than need be taken in cross-cuts or drifts. Where the rock temperature is high, it will be found that added advance and the consequently diminished cost will repay amply the time spent in placing and protecting the tubing. In all the vertical portions of the raises, it is found necessary to box the tubing for protection from falling rocks. These boxes need not be air-tight and can quickly be thrown together out of inch material. At the offsets the tubing need not be covered. The discharge from the top box must be covered with a screen to keep falling pieces from going down the tubing, and it must be especially well protected when blasting. Being close to a current of good air does not always make a good place to work. A stope was started on the 2,600 directly over a crosscut that was a main air-course. On the first floor the conditions were good, on the second floor the stope was a poor one to work in, and the third floor was so hot that but little was accomplished, though neither end of the stope was 50 ft. from the main air-course. There being no working on the 2,400 to hole to with a raise, natural ventilation was impossible. A No. 4 Sirocco fan with a 20-h.p. motor was placed at the crosscut and the air was taken through a 16-in. tube up a manway and turned directly on the men in the stope. This made it a good place to work. Often stopes such as this must be worked until connections can be made with other levels, and the use of blower-fans seems to be the best alternative. In one stope with ample connections between levels a No. 4 fan and 16-in. tubing completely reversed the air-currents, with a resulting drop of 15 deg. This good result was accomplished without causing any apparent ill effect in our other workings.

In places artificial ventilation is needed only for a short time, while a raise is being put through or a crosscut or drift is being extended. Such work may take a month or less. Conditions may be normally such that it is impossible to hold men in these places. The short period of time that we need to have a fan blowing, before natural ventilation can be attained, has made us hesitate to put in a concrete foundation. Wood foundations we have tried to avoid for all electric machinery, on account of fire risk. As motor haulage with direct current is used almost entirely, and as the trolley-lines reach almost every part of the mine, we have mounted some No. 2 and No. 3 direct-current fans on trucks. Such fans, mounted on a heavy plate and arranged so that they may be turned to any angle (in a horizontal plane) with the trucks, make a satisfactory equipment for use in these places. One, complete with its auto-starter and the canvas tubing, is run to the place where needed; here it is thrown (truck and all) from the track, or placed on a siding; a messenger-wire is strung; connections are made for the electric current, and the fan is started with but comparatively little trouble. These fans are moved from place to place and in a short time will save, in labour and foundation material, the cost of the truck and time of mounting. The examples that have been given all refer to places of considerable depth. A word might be said concerning our north-western tunnel, where a fan and tubing are used. I hope my words may in no way detract from the credit due to the foreman in charge for the good work he did. While the rest of the machinery was being installed, it was thought advisable to erect a fan at the portal, and it was but a short time before the need of it was evident. Three shifts of eight hours each were worked, and in three months' time but one shift missed blasting and that round was made up in the next eight hours. In November 446 ft. was driven, December's advance was 477 ft., and in January 510 ft. was made. The work was done with four men per shift at the breast, two miners and two shovellers. It is hard to estimate how much aid the blower-fan and tubing afforded in making this advance, but it is safe to say that almost an hour per shift was added to the working day. Sometimes this must have made the difference between getting a round and losing one. It always meant that the round could be a little deeper. Both of these things have their dollars and cents value, whether we can figure the exact amount or not. Within the last few months many improvements have been made on the tubing. The first that was sent us from the factory was coated on one side only, had no means of support and an inconvenient and inefficient means of connecting lengths. As shipped to-day, the tubing is coated on both sides, has a wide top hem in which at intervals of but a few feet are grommets and suspension clips, and the ends of each section are provided with coupling-rings that make its installation simple, rapid and satisfactory.

Zaaiplaats Tin.

The Zaaiplaats Tin results for the month of August, 1918, were as follows:—Days run, 27; concentrates won, 58 long tons; estimated profit for the month, excluding Government taxes on profits, £8,351 6s. 3d.; capital expenditure, £35 9s. 9d.

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* Abstract of Bull, A.I.M.E., Feb. 1918.

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For quotation and orders please apply to Box 1139, 'Phone 962, Johannesburg—L. FATTI & Co., Ltd.

Company Meetings.

NEW TRANSVAAL GOLD FARMS.

The 16th ordinary general meeting of shareholders of the New Transvaal Gold Farms, Ltd., was held on Thursday, Sept. 5th, in the company's office, Standard Bank Chambers. Mr. D. F. Giffillan, who presided, said:

The audited balance sheet and statement of profit and loss have already been circulated and as they are so very clear, it will only be necessary for me to make a few brief remarks thereon. Although the profit and loss accounts shows that the net profit for the year was £403 13s. 4d., against a sum of £639 16s. 5d. for the previous period, the actual revenue from rents and interest was £75 0s. 10d. in excess of the previous year, no profit on farm sales being taken to account. The expenditure on directors' fees, salaries and general charges was £721 15s. 1d. for the past year as against £978 13s. 9d. for the year 1917, a saving of £256 18s. 8d., mainly effected by the decrease in the head office salaries. No credit has been taken for the farms sold during the past year; although the farms "Leonard" and "Coldstream" were sold, the Board could not take any profit into account as no money had been received on account of the purchase price. The full purchase price, however, will be paid at an early date and the profit, which is small, taken into the current year's account. I do not think that the profit and loss account requires any further explanation other than the credit of £37 18s. 11d. which was recovered for income tax paid for the year 1915-1916. This refund was obtained after placing the fact before the authorities that originally the capital of the company was in £1 shares, subsequently reduced to shares of 2s. 6d. each. The dividends paid to shareholders were not strictly dividends in the true sense, but were more or less in the nature of a return of capital. This contention was accepted by the Commis-

sioner and as a result, the refund shown in the accounts, was received. You will notice also from the profit and loss account No. 2 that a sum of £600 has been transferred from the reserve to meet special expenditure incurred in prospecting "Kareepoort." Unfortunately, although diamonds were found on the farm, they were not found in sufficiently payable quantities and the Board decided to suspend operations, the net result of the prospecting being that after allowing for depreciation on prospecting plant, the loss was £466 1s. 9d. With regard to the debit side of the balance sheet, I do not think it requires any explanation from me. You will notice that there is still in suspense an amount of £786 8s. 1d. for profit on farms sold but not fully paid for. The property account shows, as compared with the previous year, a decrease of £3,175 14s. 11d. on account of the sale of the two farms, "Leonard" and "Coldstream." The expenditure on Mount Challenger and Fontana has increased by £35 11s. 3d. As regards the loan unsecured the Board has entered into an arrangement whereby monthly instalments of £20 are being paid. Since the accounts were closed two instalments amounting to £40 in all have been received. The cash assets consisting of sundry debtors and Treasury bills, etc., in the balance sheet under review show an increase of £3,132 13s. 2d. for last year. The bonds held by the company are well in hand. It is perhaps advisable at this point to touch upon the policy of the Board, which is to convert the fixed assets of the company into cash whenever suitable prices can be obtained; in other words a policy of liquidation over a period. It would, in my opinion, be unsound for the company to embark upon farming or ranching operations, especially as the company's cash resources would hardly enable these operations to be initiated on a scale extensive enough to enable salaries to be paid which would attract really competent men and so give some possibility of the undertaking being pro-

fitable. With the exception of "Kareepoort," your Board has no information which will warrant the expenditure of money in prospecting or developing minerals and it is doubtful whether the company will be well advised to use its funds for such purposes. The results of prospecting on "Kareepoort" were not financially successful, but they clearly proved that the farm is diamondiferous, an important factor when it comes to dealing with offers for the farm. The Board hopes to be able to make suitable arrangements at an early date to have the farm further prospected without cost to the company. Your company is not alone among land companies in regard to this policy of gradual conversion of its fixed assets into cash. It is intended in the coming year to get the fact of your company's intention to sell its farms more widely known by supplying lists and short descriptions of the farms to prominent land agents here and elsewhere. The Board desires to return to shareholders their capital and profits as soon as possible, and with this end in view the Board has, since the accounts were closed, paid a bonus at the rate of 3d. per share (10 per cent. per annum), to shareholders by transferring a sum from the reserve sufficient to pay the bonus. This reserve stood in the books of the company at £9,400. The Board decided to take this course after careful consideration and after being satisfied that the farm after being satisfied that the farms held by the company were worth considerably more than the book value. The distribution absorbed £4,750, and as there was sufficient cash on fixed deposit and in Government Treasury bills, earning a comparatively small rate of interest, to pay the £4,750 it was considered advantageous to the shareholders to make the distribution. This policy will be carried out by the Board as far as possible in the future.

Messrs. D. F. Giffillan, B. Alexander, J. Creswell, J. T. Gold-bury and J. N. McKenzie were re-elected directors. Messrs. H. T. B. Harrington and J. H. Palmer were re-appointed auditors.

Tenders are invited to be in by September 16 for the supply of about 420 tons of mild steel bars, $\frac{1}{4}$ to $1\frac{1}{2}$ diameter, for the Vaal River Barrage. For particulars apply at the Office of the Chief Engineer, Rand Water Board, 2nd Floor, Central House, where plans can be examined and copies of the Contract Documents obtained on and after Wednesday, the 28th August, upon a deposit of one guinea.

A recent list of public works, chiefly school buildings, which are in hand or are to be taken in hand immediately in the Western Transvaal, shows that the total cost will be over £30,000. The principal buildings are the Girls' High School boarding-house, Potchefstroom, £13,430; Secondary School, Zeerust, £1,900; new school, Christiana, £2,470; additions to the Milner School, Klerksdorp, £1,400.

PERSONAL.

Mr. J. L. Van Essyn has succeeded Mr. L. P. de Castle as Manager of the Roodepoort United. Mr. Johnson, of the Van Ryn Deep, has succeeded Mr. H. G. Vitch as Manager of the Meyer and Charlton.

* * *

Mr. E. A. Wallers, President of the Chamber of Mines, will speak on Sunday in the Savoy Theatre, Benoni, on "Industrial Relationships on the Rand," with special reference to the negotiations between the Chamber of Mines and the Federation of Trades since the outbreak of war.

* * *

The King of the Belgians has conferred upon Mr. Herbert Clark Hoover, the American Food Controller, and well known mining engineer, the title of "Citizen of Honour and Friend of the Belgian Nation." This distinction, which is quite unprecedented, has been conferred on Mr. Hoover in recognition of the great services rendered by him to the stricken population of Belgium, and in view also of the fact that, as a member of the United States Government, Mr. Hoover is unable to accept any decoration or title of nobility.

Tati Company.

The report of the Tati Company for the year ended 28th February last states that profit was £4,655, against £4,554, making with the balance brought forward £5,130. After deducting income tax, £676, and writing off the balance of underwriting commission, £2,500, there is left £1,954 to be carried forward. Capital has been reduced to £300,000, in 400,000 shares of 15s. each, of which 393,532 shares have been issued and 6,468 are unissued. The consequent issue to shareholders of 4 per cent. debenture stock, secured by the covenant of the company only, of a nominal amount equal to 5s. per share, has been made. Cash and investments amounted to £45,567 and creditors to £259, against cash and investments £29,770 and creditors £1,089. The improved position is largely due to payments received from the Durban Prospect Gold Mines and the Premier Tati Copper Co. has also been completed, and a plant is being erected in London and it is hoped will be ready for shipment by next month. Successful experiments have been made at the London Test Works, but operations on a large scale have not been possible owing to the difficulties of war conditions. Important experiments are also being conducted Monarch Reef Company out of the proceeds of sales of old machinery and plant. No land has been sold during the year, and few inquiries for farms are being made. Native settlement: Influx of the Moroka Baralongs was entirely stopped through outbreaks of plague and typhus among natives in the Union. The prospects of progress in the settlement scheme in the coming season are doubtful. Stores trading has again been satisfactory. Ranching business shows progress, and a profit of £1,605 has been brought into the accounts. Recent rainy season was particularly good. Report of resident general manager states that gold produced shows a large reduction. Ore crushed, 7,696 tons; sands treated, 4,350 tons; fine gold, 3,089 ozs.; fine silver, 608 ozs.; value, £12,970, against £31,736, principally due to closing down of Lady Mary Mine, which only worked for a few months and yielded £4,359, against £19,070. Ore, however, averaged practically £4 per ton. Very little development done since poor zone was encountered, but although values have greatly decreased in reefs at present exposed, manager believes that this is only temporary, and there is at least justification for further development.

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TENDERS are invited for the supply and delivery of the following plant in connection with the proposed extension of the Electric Power Station of the above-mentioned Municipality:—

(1) One Steam Boiler having a capacity of about 3,000 lbs. steam evaporation per hour. A water-tube type is preferred.

(2) One Steam Engine capable of driving a generator of about 100 Kilowatt capacity. High-speed type preferred.

(3) One three-phase 50 period alternator of about 100 Kilowatt capacity, complete with exciter, etc., preferably direct coupled to its driving engine.

(4) About 200 alternating current House Meters—240 Volts, 3, 5 and 10 Ampere capacity—and to take over about 200 direct current 230 Volt Chamberlain & Hookham meters.

Full particulars of plant must be submitted with tenders.

Further particulars regarding requirements may be obtained from Professor W. Buchanan, 75, Louis Botha Avenue, Houghton Estate, Johannesburg, or from the Resident Engineer, P.O. Box 111, Pietersburg.

Tenders must be addressed to the **Town Clerk, Pietersburg**, and marked on the outside "Tender for Machinery," and must be handed in not later than **12 noon on MONDAY, SEPTEMBER 30th, 1918.**

S. F. GOCH,

Town Clerk.

Pietersburg,

Town Clerk's Office,

6th September, 1918,

THE SOUTH AFRICAN
Mining Journal

AND ENGINEERING RECORD.

WITH WHICH IS INCORPORATED

South African Mines, Commerce and Industries.

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Notes and News

At Benoni last Sunday night, and at Pretoria during the week, Mr. E. A. Wallers delivered addresses on the present position and future of industrial relations on the Rand. His speech at the quarterly meeting next Monday will doubtless also refer to the same subject, which now bulks so largely in the conduct of the industry. We may therefore defer reference to the whole matter to our next issue. A useful summary of the position will, however, be found in the quarterly report of the Chamber, together with the report of the Randfontein Board of Reference, both published this week.

* * * *

The report of the Board of Reference on the Randfontein Federation Workers' strike has now been completed. Mr. E. A. Wallers presided over the sittings. The findings of the Board are:—(1) That the failure of the mine workers to adhere to the agreement with the Chamber to invoke a Board of Reference for the settlement of disputes was due to a letter being lost in transit between Randfontein branch and the head office of the Miners' Union. (2) That the difficulties which have arisen with regard to the introduction of the schedule of the rates of pay relating to reduction workers on the Randfontein Central G.M. Co., Ltd., and certain other points referred to in the attached report, have been due to misunderstanding. Whether that misunderstanding has arisen owing to insufficient explanation to the men concerned on the part of the management, or is due to an insufficient consideration of the matter by the men, is a question which the Board considers is now unnecessary to determine. (3) Further, the Board finds that the employees in the reduction works at the Randfontein Central G.M. Co., Ltd., are in no case being paid less than the rates prescribed in the schedule of minimum rates of pay, and in certain cases (as shown in the attached report) the company is paying the men in excess of those rates. The report mentioned above as being attached to the findings, deals in detail with the position of tube mill shiftsmen, slimes shiftsmen, sand tankmen or sand filters tankmen, relieving men, shuttle beltmen, and Sunday work.

* * * *

The report to June 30 last of the consulting engineer to the Modder East, Ltd., states: Actual development has been confined to No. 1 shaft, known as the "Cloverfield" section, and the following statement gives details of the reef disclosures in the more important development faces:—Footage advanced, 6,565; footage sampled on reef, 2,301; reef width, 17 inches; value, 19'6 dwts. Drive from Modderfontein B.: Footage advanced, 688; footage sampled on reef, 461; reef width, 24 inches; value, 5'9 dwts. The comparatively small footage on reef is due to the amount of dead work done in the form of main haulage roads, return airways, crosscuts, and preparatory work entailed in opening up a new mine. The characteristic patchiness of values found on the Far Eastern Rand has been much in evidence. Of the total footage sampled, 1,251 feet, or 54 per cent., can be regarded as profitable. The assistance afforded by the Modderfontein B. Company in driving its 2nd level into this company's property is of much value; although so far the reef disclosed has not been attractive, considerable valuable geological information has been obtained. The sinking of Nos 2 and 3 shafts has been as rapid as circumstances have permitted. The greater part of the general surface equipment of the property has been completed, the only remaining and important items being an additional Compressor at No. 1 shaft and certain underground equipment which will be required as the development programme expands. The management and employees of the company have carried out their duties with keenness and efficiency.

The consulting engineer of the New Modder writes:—The continuous improvement in profit which has now been in evidence for a number of years, was again reflected in the operations for the year ended June 30th, 1918, when the profit at £833,263 exceeded the previous year's by £48,246. The comparative figures for the last three years are as follows:—Tons milled, 1916 635,000, 1917 656,700, 1918 684,100; yield per ton milled, 1916 40s. 10d., 1917 43s. 4d., 1918 45s. 7d.; working costs per ton milled, 1916 17s. 3d., 1917 19s. 5d., 1918 21s. 3d.; profit per ton milled, 1916 23s. 7d., 1917 23s. 11d., 1918 24s. 4d.; working profit realised, 1916 £749,117, 1917 £785,017, 1918 £833,263; ore reserve (tons), 1916 8,013,370, 1917 8,914,400, 1918 9,000,000; ore reserve (value, dwts.), 1916 8·4, 1917 8·5, 1918 8·6. The new reduction plant came into operation on a small scale in April of 1918, enabling the tonnage milled to show an increase of 27,400 tons over the preceding year. This plant is giving satisfaction, and, once in full swing, is expected to work efficiently and economically. The improved yield was obtained by mining a grade slightly above the average value of the whole reserve as it existed at the commencement of the year. Owing, however, to the fact that on the whole better values were obtained in stoping than indicated by the ore reserve, which has been valued conservatively the new ore reserve at the close of the year has improved slightly in value. Working costs were higher for various reasons connected with war conditions as well as to abnormal expenditure required to bring a new section of the mine into condition for large scale production. Development operations, although on a much smaller scale than in recent years, were sufficient in scope to fully maintain the ore reserve position. The tonnage of ore developed for the year amounted to 823,500 tons of an estimated value of 8·1 dwts. The bulk of this ore was developed on the 12th 13th and 14th levels from No. 2 Incline; the value obtained is fully up to results previously disclosed in this locality, whilst the indicated stoping width is greater. There was practically no development done in the richer areas. Prospecting of upper leaders, particularly in the central section of the mine down to and including the 14th level, was continued with success; such upper reefs only contributed a small percentage to the tonnage hoisted from the mine during 1917-1918. The ore reserve has been re-measured and re-valued, and amounted to 9,000,000 tons averaging 8·6 dwts. in value over an average stoping width of 65 inches. Included in the above are shaft and safety pillars amounting to 392,500 tons at 6·9 dwts. The hoisting machinery for the circular shaft has arrived on the property and will very shortly be in operation. The increase in output accompanied by lower working costs, which can then be looked for, will with sufficient facilities as regards labour and stores result in a further increase in profit. The greater part of the capital expenditure required to bring the mine to its full basis of production should be finished in a few months. The mine can now be said to be practically equipped to deal with an output of at least 100,000 tons a month; the ore reserve is strong, and the geographical position of the mine indicates that the value of the undeveloped area is of unusual certainty. Summing up, the general outlook for the company has never been so favourable. The management and staff, together with the engineers responsible for the erection of the new plant, have done exceptional work in developing and equipping practically a new mine, whilst keeping the older section producing to its full capacity.

**New Modder
Consulting
Engineer's Report.**

The Pretoria Iron Company is now exhibiting bars of pig iron. There is a public display of samples of the various stages of manufacture and the various elements used in the smelting. Much public interest is being taken in the little exhibition.

**Pretoria Iron
Smelting and
Diamond Cutting.**

as the success of the company means much to Pretoria, the town lands being rich in ore. A highly interesting experiment is being made by the Pyramids Diamond Co., of which Mr. J. Drabbe is the principal member, in the cleaning,

cutting and polishing of diamonds. Confident of the possibilities of the trade, Mr. Drabbe has opened a workshop, where several trained men are at work. These men have been imported from Holland, where work is not so plentiful as it has been, and it is on the cards that a score of workmen will be soon employed in the task of cleaning, cutting and polishing. Difficulty has been experienced in securing the polishing apparatus, and this to a large extent is answerable for the slow development of the business.

* * * *

In the House of Commons, on July 23, Mr. Hewins, Under Secretary of State for the Colonies **South-West Africa** (Hereford, U.), asked by Major Newman **Company: Question** (Enfield, U.) whether he was aware that **in the Commons.** the South-West Africa Company, which owns more than 40,000 square miles of mining rights in the territory formerly known as German South-West Africa, had for some time past been endeavouring to obtain leave to acquire for cash the holding in the company owned by enemy aliens; and could he say why the effort of the company to free itself of its enemy shareholders had been thus far without result, said: It is the case that His Majesty's Government were asked to agree to the German shareholders of this company being approached with a view to the acquisition of their shares in the company. It was, however, thought that there was not sufficient reason to justify permission being given for negotiations of this kind with the enemy during the war.

* * * *

At the annual meeting of the Mashonaland Agency recently, the chairman, in explaining that the company had now no work in hand on mining ventures, repeated the complaint so often voiced in these columns, namely, that while the working costs of winning gold have risen probably in the same ratio as that obtaining in other commodities, there was not, as in the case of, say, base metals, a compensating advance in the price of the article produced. Attention has been directed to the development of real estate and ranching, as to which the outlook is regarded as promising. After referring to the company's interests in the Wankie Colliery, Rhodesia Chrome, and Bwana M'Kubwa, the chairman stated in regard to the Kimberley (Mashonaland) Gold Mining Co. (which may have been regarded as the bad egg of the basket) that when that company decides to liquidate, "we, as large shareholders, will receive a substantial sum as our share of the accumulated funds which that company have or will have in hand, but which, in the absence of net profits now, cannot be distributed by way of dividends."

* * * *

The annual report of the Mining Inspector for the Natal Inspectorate (Mr. J. E. Vaughan), just issued, remarks, *inter alia*:—**Natal Minerals: Prospecting Needed.** Granted that the war has had a depressing effect on prospecting, the Natal mineral deposits should not be neglected in the way that is being done at present. Practically no prospecting is going on. The country has been only scratched, and it is peculiar that whereas 25 years ago important discoveries were made, which would probably have become more important but for poor mining methods and little knowledge, nothing is now being done to try to discover fresh mineral resources. Large areas in the older formations in Zululand have never been examined. Tin, for example, has been found within ten miles of Melmoth; it hardly seems possible that it should not exist anywhere else in Zululand, and quite likely in payable quantities. If, in 1916, 198 ozs. of gold could be obtained with very little trouble from one spruit in Zululand, there is no reason why many other spruits and gulleys should not yield gold in payable quantity. What is required is trained prospectors, who are not on the lookout for samples, but for properties. I am still confident that payable mines will eventuate in Zululand, but this is unlikely as long as the only prospectors working there are poor men who cannot afford to open up discoveries on a proper scale.

The Select Committee, appointed by the Imperial Government, on Emergency Legislation reports that the date of the "end of the war" in relation to powers conferred by emergency legislation should be held to be the date when the treaty of peace is finally binding on the respective belligerent parties—that is, the date when ratifications are exchanged or deposited. If Great Britain were to make a separate treaty of peace with an individual enemy Power, the end of the war with that Power would be the date when the ratifications of the treaty were exchanged or deposited, but that might have little or no effect on existing emergency statutes. The Committee recommend that legislation should be passed giving statutory power to enable the Government to declare the date accordingly. The Committee suggest that the statutory declaration will probably help towards the elucidation of the meaning of similar phrases occurring in contracts. This announcement is of especial interest to holders of options exercisable within given periods from the termination of hostilities.

* * * *

In the course of his report on the Pretoria Mining Inspectorate, just issued, Mr. T. G. Trevor says: Sulphuric acid is necessary in the Union, and is made by the dynamite factories, who, however, import crude sulphur from Europe for the purpose. It appears to me that a very large local industry might be developed if local concentrates could be used for this purpose, but it is a matter which needs the intervention of the Government, for at present matters move in a vicious circle, the factories declining to purchase concentrates on the grounds that they cannot be assured of a constant or adequate supply, the claimholders declaring that they cannot open their mines and put up concentrating plants unless they are guaranteed a steady market. An exactly similar position prevails with regard to arsenic. The Union Government is in desperate need of over 400 tons of arsenic per annum for the manufacture of cattle dips, which cannot now be obtained from abroad. The price of arsenic is now £150 per ton. Notwithstanding this, the first producers of white arsenic are having the greatest difficulty in selling their product, and though this metal is known to exist in all the older formations of the country, no attempts are being made to prospect for or develop it owing to the distrust caused by this deadlock. In cases of this sort I believe that the only method of obtaining a prompt supply of the mineral needed is for the Government itself to offer a fixed contract price for the delivery of the mineral for a certain period. Having arranged for such a supply of the crude mineral, it would be simple to get manufacturers to contract for the conversion of it into the commercial article needed. Inquiries have been received from the Imperial Government during the year for several minerals, including graphite, tungsten ores, and manganese. It has been difficult, however, to take any advantage of these inquiries, for though these minerals are known to exist they have not been worked in the past, and claimholders and persons who know of their occurrence are not in a position to develop their propositions on the strength of mere enquiries. If these minerals are actually required, I have the greatest confidence that they can be produced economically and commercially in this Inspectorate, but it is absolutely necessary that a definite standing price for definite quality and quantity over a fixed period should be offered. I would emphasise the fact that the simple mining of more or less free milling gold ores, on which the mineral industry of this Inspectorate has relied so largely in the past, is coming to an end, and that unless its place is taken by something else a great economic calamity is going to overtake the Transvaal Province. This simple mining can be replaced, and more than replaced, by the more complex mining of refractory ores and base metals, but this change must be facilitated by the Government. If left entirely to private enterprise, a period will occur in which simple mines have been worked out and the complex ones not exploited, and that period will be a disastrous one for the trade and the revenue of the Province.

TOPICS OF THE WEEK.

THE MINES DEPARTMENT REPORT.

THE extracts from the annual report of the G.M.E., which appeared in our last issue, by no means exhaust the interesting contents of that informative document. Thus we learn that the Mining Leases Board held three sittings during the year and in regard to the successful Anglo-American tender for De Rietfontein West, "the consideration offered to the Government was a considerable advance on that of any tender made under the previous advertisement. The East Geduld area has been withdrawn from tender for the present." In his covering report Mr. Warrington Smyth, the indefatigable Secretary for Mines and Industries, says that owing to the decision of the Government to suspend, as far as practicable, the printing of Departmental annual reports for reasons of economy and following the procedure adopted for the last three years, the annual reports of the Secretary for Mines and Industries, the Geological Survey, the Chief Inspector of Explosives, and Labour Department will not be published this year. Owing to the serious rise during the year in prices of all stores and supplies due to war conditions, as well as in wages, and to the shortage of nitro-glycerine explosives and of native labour, the precarious position of some of the low-grade gold mines on the Witwatersrand gave rise to considerable anxiety towards the conclusion of the year under review. The field work necessary for the continuation of the series of the geological sheets of the Union was unfortunately much curtailed during the year, not only on account of the vacancies on the Geological Survey Staff caused by the much regretted death of Mr. Kynaston, the very able Director of the Survey, and the resignations of Doctors Mellor and Humphreys, but by demands made upon the existing staff for reports and investigations into economic questions of urgent importance. Assistance was procured in this direction by the temporary appointment of Mr. W. Wybergh to investigate and report upon the limestone and gypsum resources of the Union. While the present abnormal conditions call for active investigation of many economic problems, and the pushing on of mineral surveys, the opinion is expressed that the first work of a Geological Survey is the production of a geological map of the country as a scientific basis for all intelligent search for new minerals and solution of the geological questions having a bearing on economic production. It is, therefore, desirable that as soon as possible this branch of the Department, under Dr. Rogers, the new Director, should be so organized as to maintain the progress of mapping, while giving the necessary attention to economic questions of current interest. Recommendations in this direction have been considered by the Scientific and Technical Committee. The Secretary for Mines also mentions that negotiations were commenced during the year with reference to the more general utilization of the Government Labour Exchange by the mining companies of the Witwatersrand and the trades unions in filling vacancies on the mines. The Department also took over the Employment Bureaux formerly conducted by the Public Relief Board of Johannesburg. In the course of his remarks regarding the control of imports and exports, Mr. Warrington Smyth adds: "It is the duty of the Controller of Imports and Exports to satisfy himself, before recommending the importation of goods which are on the restricted lists of exporting countries, that there is a real scarcity of such goods in the country, or that suitable substitutes are unobtainable. In this connection it has been observed that there is a disposition amongst a few firms which have acquired stocks of necessary articles, to hoard them with a view to obtaining higher prices. It would appear to be highly necessary that some provision be placed on the Statute Book at the earliest possible date so amending the Public Welfare and Moratorium Act as to provide for control of supplies and stores necessary for the maintenance of any industry essential to the public welfare." On the whole, therefore, it will be seen that the Department, despite the war, is doing excellent work, as will be shown more clearly in the further extracts from the report which we intend to print in future issues.

THE YEAR WITH THE NOURSE MINES, LIMITED.

Points from the Annual Reports.

THE report of the directors of the Nourse Mines for the year ended 30th June, 1918, states that the working profit is less than that of the previous year by £60,692 9s. 8d., due to a reduction in the tonnage milled of 24,100 tons owing to the shortage of native labour, a lower yield of 1s. 11d. per ton milled and an increase in the working costs of 5d. per ton milled. The further advance in the cost of wages, stores and materials and war bonuses, to employees on account of the increased cost of living owing to the war, has had an adverse effect on the working costs during the year. The working profit for the year amounted to £58,180 7s. 7d., to which has been added £2,796 14s. 10d., being the difference between certain items of sundry revenue and expenditure enumerated in the working expenditure and revenue account, making a total profit of £60,977 2s. 5d., which has been carried to appropriation account. This amount, together with the balance of £144,045 18s. 2d. unappropriated at the commencement of the year, £19,692 15s. in respect of Bewaarplaats moneys received, and £3,576 5s. 3d. realised from the sale of sundry machinery and plant, making a total of £228,292 0s. 10d., has been dealt with as follows:—Annuity paid to Government in respect of undermining rights, £1,632; Government taxes, including adjustment for previous year, £12,780 5s. 7d.; dividends Nos. 27 and 28, £82,782 2s.; forfeited dividends refunded, £84 14s. 8d.; balance unappropriated at 30th June, 1918, represented by cash and cash assets, less liabilities, £131,012 18s. 7d. This balance is made up as follows:—Shares, etc., in co-operative concerns, £7,248 18s. 6d.; stores and materials, etc., £58,295 1s. 8d.; sundry debtors and payments in advance, £10,817 17s. 9d.; net cash and British War Loan after allowing for liabilities, £54,651 0s. 8d.; total, £131,012 18s. 7d. From the above it will be seen that there is still a large amount of the company's funds invested in stores and materials. Owing to the war and the continued difficulty in obtaining mining supplies, shareholders are aware of the necessity of carrying a large stock thereof in order that mining operations may not be interfered with on this account. Two dividends, Nos. 27 and 28 of 6½ per cent. and 3½ per cent. respectively, absorbing £82,782 2s., were declared by the directors during the year, free of income tax. In accordance with the "Trading with the Enemy Act, 1916" (Union of South Africa), the dividends due to enemy shareholders in respect of dividends Nos. 23 and 27 were handed over to the Custodian of Enemy Property.

CONSULTING ENGINEER'S REPORT.

The Consulting Engineer's report is as follows:—The details connected with the year's operations are fully set out in the manager's report. Owing to the shortage of native labour which prevailed at this mine for practically the whole year, operations were conducted on a scale considerably below the capacity of both mine and plant, the tonnage milled being 471,000 tons or 24,100 tons less than in the preceding year. Under the circumstances the increase in working costs was to be expected. The working profit for the year showed a reduction of £60,693, due to the smaller tonnage milled, lower yield and higher costs. Development operations were chiefly confined to the South Nourse section, and the results on the whole were quite favourable. The estimated tonnage developed amounted to 313,000 tons of

7·6 dwts. average value. The ore reserve has been re-measured, re-valued and adjusted to meet the higher working costs now prevailing, the result being as follows:—Main Reef, 104,400 tons, value 5·9 dwts.; Main Reef Leader, 797,300 ton, value 7·1 dwts.; South Reef, 611,900 tons, value 6·5 dwts.; total and average, 1,513,600 tons, value 6·8 dwts. The estimate is based on stoping widths averaging 69, 48 and 52 inches in the three reefs respectively. Compared with the preceding year, the reserve shows a reduction of 646,800 tons; of this, 405,900 tons is ore of an average value of 4·6 dwts. which at present cannot be dealt with at a profit (owing to increased working costs due to the war) and is consequently removed from the reserve pending more favourable conditions. In addition, a considerable tonnage of Main Reef previously figuring in the ore reserve has been found to be of too doubtful a value for inclusion. The average grade of the recalculated reserve is 4 dwt. higher, and an improvement in yield for the current year can therefore be expected. The gradual introduction of Jack hammer drills counteracted to some extent the labour shortage, and their use is being gradually increased with success. A return to a higher scale of profit can reasonably be expected as soon as the supply of native labour becomes more satisfactory. The manager and his staff have worked energetically under adverse circumstances and a very trying year.

MANAGER'S REPORT.

The Manager writes, *inter alia*, as follows:—The working costs for the year ended 30th June, 1918, were 23s. 8d., as compared with 23s. 3d. per ton for the preceding year. There was a decrease of 24,100 tons in milled tonnage, and this, together with the ever-increasing cost of materials, etc., due to the war, is accountable for this increase of 5d. per ton. The total working expenditure shows a decrease of £18,415 for the year, while the revenue was reduced by £79,108, thus leaving a decreased profit of £69,693. The reduction in revenue of 1s. 11d. per ton is to some extent due to the inclusion in last year's revenue of 3,103 fine ozs. obtained from cleaning up the west plant after same had been closed down, while this year only 144 fine ozs. have been included. The falling off in the labour supply mentioned in last year's report continued during the first six months of the year, reaching in December, 1917, to the very low figure of 63 per cent. of the complement, in consequence of which the percentage of ore broken by hand labour was still further reduced, namely, from 76 per cent. to 51 per cent. The introduction of the Jack hammer drill very effectively replaced the hammer natives, but the full benefit of this substitution was not obtained during the period under review, as it takes some little time to gain the experience necessary for the production of the full efficiency of these machines, but they are now proving a valuable asset in stoping operations. Their installation, however, has been rather costly and has swelled the working costs considerably.

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The Main Reef has again been overhauled and large blocks have proved to be unpayable under present-day working conditions, and have consequently been discarded. The improvement in the Main Reef Leader in the South Nourse section has been maintained. It has been found possible to mine a considerable tonnage from the South Reef in the eastern section of the mine. Old blocks of ground at present shown in unpayable reserves continue to be investigated, and in some cases payable reef is found. The development footage accomplished during the year, viz., 11,746 feet, shows a decrease of 8,481 feet on that of the previous year. Shaft sinking in the South Nourse incline was discontinued in the early part of the year, only 61 feet having been sunk as compared with 136 feet for the previous year, but it is anticipated that sinking will be restarted at an early date. A small air hoist is being erected so that the waste rock from sinking operations can be hauled and conveniently packed in stopes in the vicinity. Very little development has been

done at the No. 4 incline, this shaft being flooded for about four months owing to the very heavy rains. Development is now proceeding from the old workings at No. 1 shaft, South Nourse. Generally speaking, the development results for the year have been promising, and it is satisfactory to note that the percentage of payability in the Main Reef Leader, South Nourse section, mentioned in last year's report, has more than been maintained. No mining has been done in the central section during the year. During the year the west incline shaft was re-equipped with skips and winder and stoping operations are now being conducted, the rock being lowered to the 20th level. The reduction plant has run smoothly and efficiently, but has not yet been tested at its full capacity. All other plant, both surface and underground, has been maintained in good order. Surplus machinery is gradually being disposed of and good prices obtained for same. Health conditions and phthisis eradication continue to receive close attention.

PERSONAL.

Mr. K. O. Powrie, surveyor of the Luipaardsvlei Estate, has been appointed Government Inspector of Contracts, the newly-created post in connection with the survey staff of the Government Mining Engineer.

* * * *

The report of the Government Mining Engineer shows that during 1917 there were thirteen technical officers and sixteen clerks of the department on military service, of whom three inspectors of machinery, Messrs. Symmes, Wilson and Hume, and one clerk, Mr. Smith, of the Explosives Office, were killed in action.

The Lonely Mine.

The following are the particulars of the output of gold, etc., from the Lonely Mine for the month of August, 1918: Mill ran 722 hours; crushed 5,000 tons; fine gold recovered, 1,713.044 ozs., value £7,202 0s. 3d.; slimes treated, 5,000 tons; fine gold recovered, 2,798.698 ozs., value £11,769 15s. 4d.; total fine gold, 4,511.742 ozs.; total value, £18,971 15s. 7d.; profit, £8,385 12s. 10d.

Antelope G.M. Co.

The report of the Antelope Gold Mine for 1917 states that investments sold realised a loss of £8,256, leaving investments representing at cost £14,194, valued at £4,092. Profits amounted to £9,637, from which the loss on realisation of investments has been written off and a reserve for income tax provided, leaving a debit of £1,467, which, added to amount brought forward, gives a total debit of £4,010. 46,334 tons were crushed having a value of 10.5 dwts. There were recovered 22,095.9 ozs. with a value of £94,257, leaving a working profit, including sundry revenue, of £12,586. Working costs, mainly due to war conditions, show an increase of 8d. per ton. Actual extraction was 90.4 per cent. of head values. Shortage of skilled and native labour hampered development and shaft sinking; and ore reserves at 76,000 tons, of an average value of 9.9 dwts. show a decrease of over 25,000 tons and .2 dwt. in value. Recent development, especially in the 14th level, is encouraging, 69 ft. of driving giving a value of 12.4 dwts. across a width of 110 ins., while individual sections show still better results.

The asbestos mining industry in Rhodesia showed a remarkable expansion during 1917, the output amounting to 9,562 tons of a value of £189,890, as compared with 6,157 tons valued at £99,059 during the previous year. The mines in the Victoria district have continued to produce satisfactory returns, and Mr. Ackermann reports that the area at Shabanie in the Belingwe district "is probably the richest and finest deposit of its kind in the world."

All the property, interests and assets of the Orenstein-Arthur Koppel Co. were sold at public sale by the Alien Property Custodian on August 15, at the company's central office building, at Koppel, Penn. The property included everything owned by the Orenstein & Koppel-Arthur Koppel Aktiengesellschaft, registered in Pennsylvania as the Orenstein-Arthur Koppel Co.; the Koppel Land Co.; the Beaver Connecting R. R. Co.; the Koppel Water Co.; the Pennsylvania Car and Manufacturing Co.; the Universal Railway Products Co.; and the Koppel Sales Company.

Minerals Separation.

A very satisfactory meeting of Minerals Separation, Ltd., was held recently in London. An interim dividend of 25 per cent., payable on the 25th inst., has been declared and there is reason to believe that a further distribution will be made later in the year. Minerals Separation, North American Corporation, a company formed by Minerals Separation, Ltd., has already paid a maiden dividend of 10s. per share, and the outlook for the Corporation appears to be favourable. Negotiations with a powerful French company (the Société Minière et Metallurgique de Peñaroya) have been concluded. As this company possesses immense mining propositions, the ores from many of which could not be profitably treated without flotation, large profits are expected. The agreement with the Bwana M'Kubwa in the treatment of tin ores, and the works' staff are hopeful of evolving a new method for improving the concentration of this class of ore.

The Bechuanaland Exploration Co., Ltd., holds shares in other companies to the estimated amount of £180,552, on which for the year ended March 31 last £17,992 has been received in dividends and profit on shares sold. The Rhodesia Chrome Mines, Ltd., in which this company holds a one-third interest, shipped 44,699 tons of chrome ore during the year ended January 31 last, and for the same period has paid interim dividends amounting to 20 per cent. The Rhodesia Broken Hill Development Co., Ltd., has acquired the whole of the share capital of the Rhodesian Lead and Zinc Syndicate, Ltd. The syndicate has entered into a further contract with the Ministry of Munitions to supply 800 tons of lead per month during the whole of the year 1918. The company's land holding in Southern Rhodesia comprises 265,494 acres. The total head of live stock on the Aberfoyle and Tokwe Estates at March 31 last was 3,665 head; in addition, 1,694 head of cattle were in charge of tenant farmers. The land owned in Northern Rhodesia remains the same as at the date of the last report, but the two town sites at Bulawayo have been sold. The company still owns 14 town stands. The assets amount to £370,933. Out of the credit of £19,189 a dividend of 6d. per share is recommended.

COMMERCE AND GOLD PRODUCTION.

Full Text of Address by Sir L. Phillips.

At a meeting on July 30th of the members of the London Chamber of Commerce, Sir Lionel Phillips delivered an address on "Commerce and Gold Production." In the course of his remarks, Sir Lionel Phillips said: Commerce is to industry as rain is to agriculture. The labour of the farmer in preparing the soil and planting the seed would be spent in vain without the moisture to feed and the sun to ripen the crops. The resulting harvest could not be distributed and realised without the aid of the carrier and the dealer. Similarly the fruits of industry necessitate the co-operation of the banker, the merchant, the trader, and a variety of agents. The great war is producing a financial situation without precedent. Hence we must overhaul our preconceptions upon economic questions. If we find a solution of the problems more correctly, and more astutely, than other nations we shall benefit. If we fail to do so we shall suffer.

GOLD THE ONLY SAFE TOKEN.

If the nations of the world were on an equal footing in possessions, in the industry of their people, and in honesty, no metallic medium of exchange would be required. Scraps of paper in various forms would answer the purpose. But if we may hope that some day this ideal state will be reached, no one will contend that it has arrived. Hence the gold standard. Most people will, I imagine, agree that there never was a time in past history when gold played as great a part in restoring the financial situation as it is likely to play after the war. An output of commodities would answer the same purpose, but many years must elapse before they can be produced or absorbed. Meanwhile trade balances must be settled in gold, or by loans, the interest chargeable on which will partially depend on our gold reserve, which, indeed, is our reservoir of immediately available resources. A half per cent. interest does not sound very important to the man in the street, but on a debt of even £1,000,000,000 it is £5,000,000 a year. Our debt looks like being many times that vast sum. Hence a falling off in the gold supply is a matter of grave concern. Rates of interest upon external loans bear to some extent upon the interest of home loans. Before the war our imports exceeded our exports of commodities, but the great savings of the nation invested abroad, dividends and interest on which were remitted here, produced a net trade balance in our favour of about £200,000,000 a year. The accumulated savings were enormous. The gold supply is of vital consequence for the regulation of foreign exchanges, as backing for our trade and credit system, and as cover for our inflated issue of paper currency. Gold need not necessarily be brought into circulation to counteract inflation. The growth of the gold in reserve would answer that purpose. Perhaps the proposal of Sir Edward Holden to imitate the practice of the United States in our use of the gold reserve might make it go further than under the provisions of the Peel Act, but no expedients can take the place of an adequate quantity.

STEPS NECESSARY TO PREVENT SHRINKAGE OF PRODUCTION.

I do not suggest paying more than a sovereign for a sovereign's worth of gold. But the sovereign paid must be worth a sovereign's worth of gold, and, if it can be shown that now it is not worth that, the difference should be made up. It can be proved, I think, that the Government has made a large profit by purchasing the output of the Empire at the standard price and paying for it in the present currency, by using the gold to regulate foreign exchanges, which would have been more adverse without it, and by the creation of a large amount of paper currency, which has had the same effect upon prices as though gold to the same amount had been actually issued. Now if gold be necessary, what are the steps which can best be taken to maintain as large a supply as possible on economic grounds that can be justified? The suggestion has been made that a subsidy should be given to low-grade mines. I disagree entirely with the adoption of that remedy as one that is impossible of application. The only basis to go on is that of gold value. But it may be urged if special consideration be paid, rich mines would derive the same advantage as poor mines. This circumstance does not affect the question, because we are dealing with value of product, but, nevertheless, no one could reasonably object, I think, to a stipulation that any profit per ton upon ore of any given yield in excess of that derived from similar ore taken over an average of, say, one year before the war should be refunded to the purchaser of the gold. Such a condition would prevent any producer from being unduly benefited. The period over which the special terms shall apply is one for investigation, and should be included in the review of all the factors involved.

AMERICAN OPINION.

The Americans are fully alive to the gravity of this question, and the *Engineering and Mining Journal* of June 22 contains a letter from Mr. McAdoo, the Secretary to the Treasury, in which he dwells upon the immense necessity of gold production as a support to the "credit structure": "At no time has this country so much required the largest possible production of gold as at present. Next to food and ammunition, gold is one of the most-needed war essentials." If this be true of the position of America, with its reserve of £600,000,000, it is doubly so of Britain. The British Empire produced last year £56,139,030 out of the total world output of £87,983,130, or 63·8 per cent. The standard price for fine gold here is, roughly, 85s. per ounce. Its varying value is not expressed in a

rise or fall in the value of the metal, which fluctuates infinitesimally, but in the rise and fall in the price of commodities and in exchange rates between different centres. Rates of exchange mainly represent the state and tendency of trade balances. The movement of a relatively small amount of gold has a surprisingly large effect upon rates of exchange. And rates of exchange alone cannot be taken to estimate the value of gold. Nor can the fact that gold used in the trade is selling for 115s. an ounce, against the standard price of 85s. be regarded as the true value. A small percentage of the output would swamp that market, which is at present strictly controlled. The case of the producer rests upon broader issues. Does the consideration now paid to him represent the value of his product? If not, he should in fairness be compensated, as are the purveyors of other needed commodities. Mr. Hennig Jennings, the Consulting Engineer of the United States Bureau of Mines, in his valuable pamphlet entitled "The Gold Industry and Gold Standard," puts the matter concisely in the following words: "To stop gold mining in a time of financial stress, as has been indicated, would be like closing the doors of a bank when a run is made upon it. It, therefore, must be evident that it is vital for this and all Allied countries to encourage gold mining."

"A GRAVE MATTER FOR ALL."

The outstanding need is to avert, if possible, an increase of paper currency. If we can maintain the stream of gold, then gradually and in due course we shall be providing cover for paper currency without further augmenting prices, and may be able in consequence—similarly, in a gradual, well-considered way—to withdraw some of the paper currency without causing a sudden and disastrous fall in prices. This is a grave matter for all of us, from the banker to the labourer, because we must look forward to a time when we shall have to submit to lower prices for purposes of competition in the export trade. High prices are not profitable to anyone. The evil of the present scale of wages, with its superficial benefit to the masses, lies in the cause—namely, the stimulus of borrowed money. The foundation is unsound, and sooner or later must be strengthened. Otherwise, when we cease to borrow and are dependent for prosperity on our ability to compete with rivals in the markets of the world, we shall be disillusioned in the most relentless of schools: that of unemployment and poverty.



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ACCIDENTS ON WITWATERSRAND GOLD MINES.*—II.

Annual Review and Analysis by the Government Mining Engineer.

Accidents from Falls of Ground.—In analysing the question of mining accidents it is found that in the past few years very little progress has been made in reducing the number of accidents from falls of ground. The general accident rate for several years past has shown a satisfactory and fairly regular decline, but these conditions are not applicable to falls of ground. Accident tables show that the percentage of deaths due to falls of ground in the Witwatersrand gold mines was 29·32 per cent. in 1911, and that this percentage has risen to 40·89 per cent. in 1917. This rise, too, is unfortunately a steady one and not due to any abnormal cause or mine disaster. Each year the mines experience increasing difficulties in keeping open existing workings and opening up deep areas under pressure. The study of safety measures in respect of falls of ground has not in any way been commensurate with the efforts to win ore under difficult conditions of pressure or to extract the last few tons on the boundary of a worked-out mine. Nothing good from the point of view of safety can be said for the careless system of mining in the past when the only thought was to get out the best rock and keep the mill going. To-day mine managements are reaping the benefit of past bad work: large sums are being spent upon shafts and main travelling ways that have been robbed of adequate support years ago, and the huge areas of unsupported stoped-out ground are causing an expenditure which, when sufficient attention is paid to the safety of the workers, has a very serious effect on mining costs. Sand filling came in some years ago, but has rather gone out of fashion, all sorts of reasons being given against this practice, but there is no doubt that expense is the main argument against it, since large areas have to be filled to be of any use. Timbering is heavily on the increase, but not sufficiently so, nor is it systematic enough to cope with mining pressure. The personal judgment of individual overseers and miners has been tried and found wanting, and their decisions as to whether a place should be supported or not is frequently at fault. The advocates for and against pillars have argued the question for some years past, and are apparently agreed upon one point only, viz., that pillars to be of any use must be cut much larger than in the past. After studying the pillar question very considerably the Inspectors of Mines are almost all of opinion that permanent pillars are a mistake and that complete extraction and close filling or packing are the best methods to ensure safety conditions. In nearly all cases, in consultation with managers in regard to underground work, inspectors advocate the extraction of drive pillars before they can cause damage by sudden bursts. If this increasing danger from falls of ground is to be adequately coped with, systematic support must be adopted. The method and lines of this system of systematic support will have to be very carefully considered, and will have to be sufficiently elastic to cover the various depths at which mining is now carried on and also the varying degrees of pressure that the outcrop and deep level mines undergo.

Accidents in connection with Explosives.—Many of the worst class of mining accidents are caused by drilling into a partly fired hole, there usually being more than one death when this occurs. While there are bound to be a number of genuine "cut outs," it is probable that these accidents could be diminished if the practice of using explosives more than once was stopped. When one hole brings away more ground than was intended and disturbs the charge in another hole before the latter is detonated, the explosives may come away with the rock and be scattered among the broken ground. After lying on the damp ground these fragments and half cartridges are frequently returned to the miner's explosive box and used again. These cartridges, while being likely to have exuding nitroglycerine adhering to them and therefore dangerous when being placed in a hole, are, when at the bottom of the hole, less sensitive than dry cartridges and may easily hang fire, thereby resulting in a partly fired hole. If all explosives after once being used were returned

to the surface for destruction and the miners credited with the amount, there would be less likelihood of partly fired holes and at the same time a certain incentive to careful examination for old explosives.

Changes in Personnel.—Frequent changes in the white personnel on these mines would appear to have the effect of increasing the accident death-rate, as indicated by the following table:—

WITWATERSRAND GOLD MINES.

Percentage of Changes in White Personnel to Average Number of Whites Employed.	Death-rate.
Up to 10 per cent.	0·55
11 per cent. to 15 per cent.	2·57
16 per cent. to 20 per cent.	2·99
21 per cent. to 25 per cent.	2·35
26 per cent. and upwards	3·28

Safety First Competitions.—The Safety First Committee of the Rand Mutual Assurance Company is giving the most valuable assistance in the reduction of mine accidents and has increased its activities in a most noticeable manner during the past three years. The prize results for the year 1917 are as follows:—Competition No. 1: Best absolute record: This was won by the Wolhuter Gold Mines, Ltd. Competition No. 2: Best improvement on mine's own rate for the three previous years: Class A.: Aurora West United G.M. Co., Ltd., 112·6 marks. Class B.: Hercules Section of the East Rand Proprietary Mines, Ltd., 140·3 marks. Class C.: Roodepoort United Main Reef G.M. Co., Ltd., 122·5 marks. The floating trophy goes to the Hercules Section of the East Rand Proprietary Mines, which had the highest number of marks in the three classes, while cash prizes will be given to each of the underground officials of all three mines. These remarks upon the comparative death-rate in mines must include the fine record of the New Unified Main Reef Company, a comparatively small outcrop property with an average number of employees of about 900. This mine has not had a fatal underground accident for five years.

(To be continued.)

The diamond haul at the Kameelfontein diggings during June was 1,615 carats, valued at £3,504, and during July 1,849 carats, valued at £6,152. The number of European diggers working there in June was 112, and there were 500 natives. During July the European workers numbered 112 and natives 674.

The Haber process of making sulphate of ammonia has been investigated in the United States at the Arlington plant under control of the Department of Agriculture, and is economically producing synthetic ammonia. The plant is open to public inspection, and it is expected that large private industrial works will follow from this Government initiative. The process is extensively applied in Germany.

Watching Manufacturers' Interests.

The Federation of British Industries, the British Empire Producers' Organisation, and the Imperial Council of Commerce have formed a joint council—(1) To consider and report upon any questions of mutual interest reflecting the common aims of the three bodies, viz.: To ensure the conservation and development of the industry, production, and commerce of the United Kingdom and her Overseas Dominions, and submitted by any one of the three constituent bodies; (2) To initiate the consideration of any such subject; and (3) To take any action in relation to such subjects that may be specifically authorised by the constituent bodies. This is undoubtedly an important step in the right direction, and means that in future all interests affecting manufacturers in this country will be most carefully watched.



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TRANSVAAL CHAMBER OF MINES QUARTERLY REPORT.

Recent Activities of the Chamber Reviewed.

THE latest report of the Executive Committee of the Chamber of Mines has the following, *inter alia*:—The monthly report issued by the Department of Native Affairs shows that at the 31st July, 1918, 279,100 coloured persons were employed in labour districts of the Transvaal. Of this number, 211,901 were engaged on mines and on the various classes of works, i.e., chemical, metallurgical, brick-making, and other works as defined in Part I. of the Coloured Labourers' Health Regulations, 1906, and 67,199 were in other employ. In July the Government appointed a Commissioner to enquire into the unrest amongst natives in the service of the Johannesburg Municipality. On July 19th the President gave evidence on behalf of the Chamber. The Commissioner has now issued his report, which is under the consideration of the Executive Committee. The Chamber, on the advice of its Medical Officers' Committee, has approved of the scheme for the training of Native Hospital Orderlies under the immediate supervision of European Hospital Superintendents. The scheme will shortly be put into force.

GENERAL HEALTH CONDITIONS ON THE MINES.

The nineteenth and twentieth dust sampling surveys of the mines were completed during the period under review. The average dust content per cubic metre sampled was 3.0 milligrams in the nineteenth survey and 2.6 milligrams in the twentieth survey. In addition, 10,631 dust samples taken by mine dust inspectors were analysed in the Chamber's laboratory. The Executive Committee has agreed to reserve at the Miners' Phthisis Sanatorium ten beds for purely tubercular patients who have not necessarily been employed on the mines.

INDUSTRIAL CONDITIONS OF WHITE EMPLOYEES.

A conference took place between representatives of the Underground Officials' Association of South Africa and representatives of the Chamber, when the questions of an increase in salaries, the establishment of reference boards, and holiday leave regulations were discussed amongst other things. These questions were still under consideration at the close of the period under review. In June the South African Industrial Federation, on behalf of its affiliated Unions, submitted various requests, including, *inter alia*, the cancellation of the agreement dated September 13th, 1916, in respect of the clause binding the Unions not to raise the question of wages until three months after the declaration of peace, in order to permit the consideration of the mechanics' war allowance being increased to make the total earnings received for a 48 hours' week £8 2s. In August the Chamber replied to the above requests, offering for all employees a sliding scale of war bonus proportionate to the percentage increase in the cost of living, and refusing the request that the wages of members of the mechanics' Unions be increased to £8 2s. a week. The result of the ballot on the Chamber's offer was for its acceptance. A conference has taken place between representatives of the South African Mine Workers' Union and the Chamber, on the new form of agreement submitted to the Union for discussion. At the close of the period under review the matter was still under consideration. In August the Ironmoulders' Society of South Africa demanded an increase in the standard rate of pay to £8 2s. per week of 48 hours. This demand was refused by the Chamber, and the members of the Ironmoulders Society employed on the mines at the close of the period under review were on strike. The following boards of reference sat during the period under review: Case of surface mechanics temporarily employed underground—New Heriot G.M. Co., Ltd.; case of D. J. Jones—Nourse Mines, Ltd.; case of reduction workers—Randfontein Central G.M. Co., Ltd. A board of conciliation sat during the period under review and reported on certain

points relating to certificated winding engine drivers. In view of the increasing number of apprentices, the board of control of the Government Miners' Training Schools has hired certain buildings for a school on the Robinson Deep Mine, pending the erection of a new school on the Far East Rand.

The Executive regrets to record the very serious accident which occurred at the Meyer and Charlton, resulting in the loss of many valuable lives, and tendered on behalf of its members its sincere sympathy to the dependents and relatives. The Chamber, on behalf of its gold mining members, as from July 1st increased its subscription to the Governor-General's Fund from £30,000 per annum to £36,000 per annum, in monthly instalments of £3,000. The pooling arrangements for mining supplies are working satisfactorily, and material is arriving in quantity sufficient to allay at the present time anxiety in this respect. The appointment of the Miners' Phthisis Commission was notified in the *Union Gazette* of the 14th June, the Joint-Secretary and Legal Adviser being appointed to represent the gold mining industry. A statement was presented to the Commission on behalf of the Chamber, and on August 12th the President and the technical advisers gave evidence in support of the statement. The Ordinance of the Provincial Council, imposing an additional tax on the profits of gold mining companies, has been assented to. The Executive Committee proposes to test the validity or otherwise of the tax in the Courts. The following additions to membership as from 1st July have been notified:—Gold mining section: Simmer Deep, Ltd. (representative, Mr. Jas. E. Kent); West Springs, Ltd. The appointment of the following representatives has been notified:—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.: Mr. M. J. Turner (additional representative). Jupiter Gold Mining Co., Ltd.: Lieut.-Col. F. Leslie Brown, D.S.O. The following changes in representation have been notified:—Randfontein Central Gold Mining Co., Ltd.: Mr. J. F. Rutherford, *vice* Mr. J. H. Robinson. Van Ryn Deep, Ltd.: Mr. Chas. Marx, Junr., *vice* Mr. J. F. Rutherford.

According to statements in the *Far Eastern Review*, attempts are being made by the Netherlands Diamond Workers' Union to develop the production of diamonds in Dutch Borneo. The difficulties experienced in maintaining the industry in Amsterdam since the war, and more especially the efforts of the S.A. Diamond Corporation, Ltd., to establish Birmingham as a centre for the diamond cutting industry are responsible for the efforts now being made to develop this old field.

A considerable change for the better is shown in the results reported for the year to the end of March by the directors of Ohlsson's Cape Breweries. Twelve months ago the profit decreased £10,500, to £72,154, and the Ordinary dividend, which had been reduced from 8 per cent. to 6 per cent. in 1915-16, came down to 4 per cent. For the past year the net balance rose £23 400, to £95,527; the dividend is to be advanced to 8 per cent., free of tax, and the carry-forward will be over £9,000 larger at £40 171. The maltings premises at Cape Town, which were destroyed by fire, have been rebuilt and all essential machinery reinstalled. The report states that "it has been now established, as the result of a test action brought to decide the point, that Preference shareholders are entitled to the rebate of income tax granted by the Treasury in cases where a company pays income tax in one of the Dominions. The tax, aggregating 2s. 8d. in the £, deducted in excess from the dividends paid to the Preference shareholders during the last two years will be added to the next distribution on October 1. and provision for the amount be made in the past year's accounts."

THE MINING INDUSTRY OFFICIALLY REVIEWED.—II.

Some Extracts from Annual Reports of Inspectors of Mines.

On 12th December, at 3.30 p.m. (blasting time), another shock occurred, and a Leader stope to the west of the workings above referred to was afterwards found to be shattered. The hanging wall was broken and powdered as though by explosive. All the above occurrences in the Village Main Reef were in a strip of ground between faults, which was practically surrounded by worked-out ground. In each case where damage was done the ground above or below in the other reef was intact. The danger of further work under those conditions, even with ample roof support, was so obvious that work was stopped. It has subsequently been arranged to remove the South Reef first under special precautions, using reef packing and boards spragged against the working face. The Ferreira Deep Mine also was seriously affected by rock-bursts, accompanied by earth shocks. Those mostly occurred in or near the shafts, but fortunately caused no loss of life. The rock-bursts not coincident with earth shocks generally occur in the deeper mines, and seldom cause fatal injuries. Under present conditions the stones which burst off from the working faces owing to internal strain in the rock are generally small. It is to be feared, however, that with increasing depth the problem of securing safety from such bursts will become more serious. At the Ferreira Deep, unusual measures continued to be taken to keep the shafts open in spite of the pressure and movement affecting them. Reef has been stowed away under the inclined shafts by the reef packing method, and in the shaft roofs pigsties have in many places been built above the shaft timbers to take up the movement of the roof and save the shift timbers. From time to time the pigsties are partially removed as the pressure on them becomes too great. Other shafts, as, for instance, those at the Robinson Deep, have also needed special and costly work to keep them safe. It is regrettable that in the earlier development of the mines proper provision for the permanent security of the shafts was not made.

GERMISTON INSPECTORATE, TRANSVAAL (C. E. HUTTON).

Labour.—Whilst there has been no actual lack of applicants for vacancies, managers, however, complain that a large percentage of these men prove to be inefficient, particularly timbermen. It is of interest to note that only a few years ago all the single quarters on mines were occupied, whereas at the present time whole rows of these quarters are standing tenantless, this change having been brought about by the building of special quarters for the reduction works employees and to other employees preferring to live in private homes distant from the mine.

Ambulance Stations.—The new regulation dealing with underground ambulance stations, insisting upon such stations being placed at intervals of not less than six levels apart, has proved effective. Thefts from these stations are rare, whereas under the old regulation bandages, solutions, etc., were constantly being stolen. The Goldfields Group during the year started ambulance classes for natives (boss-boys), and the intelligence and real interest shown by the "boys" was pleasing. On the Simmer and Jack Proprietary Mines no less than 131 natives have received recognition of being competent to administer simple first aid. The hospital superintendent's reports show that the trained first-aid natives have on several occasions shown good efficiency in dealing with accidents, the number of septic cases having been reduced to a quarter of what they used to be.

Ventilation.—Regulation 58 (2) has been in force since June, 1917, but up to the end of that year it has not been observed in its full sense. Quantities of air circulating in the mines in most cases have been measured, but the quantities circulating in each ventilating district have not yet been recorded. Measuring the amount of air descending into the mines shows that more than 30 cubic feet per person over the twenty-four hours is supplied, but, as before stated, it has not yet been shown by actual measurement that air currents are split so that each ventilating district is receiving "a current equivalent to not less than 30 cubic feet of air per minute per person employed therein." Managers of outcrop properties, where numerous openings to the surface exist, claim that it will be almost an impossibility to ascertain the amount of air circulating in

each ventilating district; the total air passing through such mines may, however, in most cases be ascertained. Under Regulation 56 (4) direction of air currents and positions of doors, etc., have to be shown on the underground plans; since, however, the regulations now insist upon actual measurements of air currents being made and recorded, the mines, in my opinion, should keep separate plans on which could be recorded not only the directions of air currents and stoppings, etc., but also velocities and quantities. It would be necessary to make a new plan—white print, scale say 1:2,000—every three months. Such a plan would make for simplicity, and also the managements, at a glance, would be able to see where ventilation was insufficient. This method of recording ventilation particulars would be superior to that of merely logging quantities, measured at various positions, in tabulated form in a book.

Phthisis.—Since the promulgation of the amended regulations the interval between the general blast at the end of the day-shift and the descent of the night-shift has been fixed by this office. This period is not a uniform one, it depending on certain conditions such as distances of the working places from down-cast shafts and whether the ventilation is natural or mechanical. After consultation with managers concerned, and taking into consideration the aforementioned conditions, these intervals have been made as great as economically possible; to quote extremes we have, on mines where nightwork is done, these intervals varying from three to seven hours. Since blasting can take place only once in twenty-four hours, nightwork perforce now only consists of lashing, tramming, and hauling. Saturday afternoon shifts are no longer worked. On application being made to work "back stopes," permission so to do, in all cases, has been granted conditionally that monthly determinations for dust, expressed either in milligrammes or particles and for CO₂, are made. These data have to be sent to the Inspector of Mines monthly. Where the CO₂ results are high in any of these working places, it will be evident that the ventilation of any such place is inadequate, and the manager concerned, if he has not already done so, is instructed to take immediate steps to correct the evil. All mines in which more than 1,000 persons are employed underground on any one shift have appointed an official to examine and report to the manager on matters relating to the anti-phthisis appliances in the mine and the ventilation. In some cases these officials are whole-time men. During the year two managers have been officially cautioned for contravening Regulation 61; and 189 persons have been prosecuted for contravening dust-allaying regulations, viz., 1 shift-boss, 25 miners, and 161 natives, and in one case a miner had his certificate cancelled and in another instance suspended. The results of underground inspections (227) made by inspectors would show that conditions relative to the prevention of dust were satisfactory. It has been, however, frequently noticed that the sides of some travelling ways—drives—are not always kept wet throughout their whole length. Such travelling ways are furnished with sprays, but their effective range is too short, with the consequent result lengths of dry walls exist. This fact of dry dust—probably coarse, plus 10 microns—lying on ledges of the rough walls does not necessarily mean that it is disseminated in working hours, but it will be in all probability disturbed at blasting time when all persons are out of the workings. The effective range of sprays depends greatly on the air current, and where this is low sprays must be placed at closer intervals. Instructions to this effect have been given. The Chamber of Mines' dust samplers have during the year taken 1,216 samples of air for dust determinations, in, of course, the same number of different working places, on various mines; in every few cases have these samplers logged that the dust regulations were not observed. These cases mentioned would show that the "tin can" method of allaying dust is not yet dead, and occasionally it is reported that one water hose only was visible for two machines.

Sand Filling.—Three mines in this district are lowering sand into the old workings, viz., the Simmer and Jack, Rose Deep, and Knights Deep. The Simmer and Jack, as in past years, have lowered all their current sand residues back into the mine; the total tons of sand so lowered since they started the practice now amounts to 1,757,938 tons. The Rose Deep during the year 1917 lowered 491,200 tons, the progressive total being 719,140 tons. On the Knights Deep 196,290 tons have been lowered through one borehole. The second borehole, mentioned in my last annual report, has not yet holed, difficulties having been incurred. When this second borehole is completed all current residues will be sent below.

(To be continued.)

MINING INSTITUTE.

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RECENT RESULTS:

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MANAGERS: September, 1917—Sixteen passes and three conditional passes; January 1918, 90 per cent. passed in Metal Mining. Several hundred Certificates obtained.

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THE RAND MINES SYSTEM OF NATIVE HOUSING.

THE Rand Mines, Ltd., have set a praiseworthy example to all mining companies in connection with the housing of mine natives. For some time now Mr. A. Gibb, builder and contractor, Benoni, has been carrying out large contracts in erecting new rooms in the City Deep, New Modder, Modder B. and Modder East native compounds, to the plans and specifications of the company. There are 48 bunks in each room, and the whole are of concrete. The trouble hitherto experienced with wooden fixtures is that vermin multiply and can never be entirely eradicated even though the structures are taken down every month and steamed. With this new system of concrete bunks and the building being such that there is no possible place to find lodgment, vermin are reduced to a negligible quantity. All the slabs for partitions, the pillars which support the slabs on which the men lie, and indeed everything except the roof, the doors and windows, are of concrete. The corners are all filled in and rounded off, the floors are of concrete. The bunks are in two layers round three sides, leaving an open space on entering the room, where the natives can squat round the two braziers which have funnels over them and outlets for smoke through the roof. Each room is 34 feet by 28 feet 6 inches, giving 977 super feet. The cubic air space is 13,685 feet, and for ventilation (which is indeed excellent) there are 50 super feet. There are also 100 cubic

feet glazed space. It is important to note also that the slab on which the native lies is not of ordinary concrete. It is a mixture of sawdust and magnesite cement, which ensures much greater warmth. The East Rand correspondent of the *Star* says that in conversation with the natives, it is gratifying to note how much they appreciate these up-to-date rooms. Those who occupy them have a great pity for their less fortunate brethren, who are obliged to occupy the old-time quarters! In the New Modder compound there are 30 of these new rooms. At the City Deep Mr. Gibb erected sixteen rooms of the same size. At Modder B. he has completed 25 rooms. At Modder East Mr. Gibb erected fifteen rooms, all holding the full complement of 48 natives. Features of the Rand Mines compounds also are that a waterborne sewerage system exists; that the wash-houses erected by Mr. Gibb are thoroughly up-to-date with constant running water, shower baths, etc., and that flushing and scrubbing go on constantly. The cook-houses are models of cleanliness also, and the kaffir beer-houses and equipment are also up-to-date. There is an abundance of water to swill everything. Needless to state, the natives in these compounds look well fed, happy and contented. Mr. Gibb, the contractor, takes a pride in working to such excellent plans and specifications and in carrying out a system for the housing of natives which stands to the credit of the Rand Mines, Ltd.

Liquid Air as an Explosive.

At a recent meeting of the German Bunsen Society for Applied Physical Chemistry, Dr. Richard Lepsius, of Berlin, gave an address on the use of liquid air as an explosive in mines and quarries. Liquid air, which contains the necessary oxygen, is stored and transported in suitable glass or porcelain vessels made for that purpose. The cartridges contain some carbonaceous substance, which is to serve as the combustible element in the explosive compound, such as sawdust, soot, naphthalene, turf, etc. These substances must be so proportioned to the quantity of liquid they are able to absorb as to produce explosion. To make the liquid air suitable for explosive purposes it must be enriched with 95 to 98 per cent. of oxygen. When required, the cartridges are dipped into the liquid air and are immediately placed in the boreholes. This is an advantage over many other forms of explosives. The cartridges are rendered explosive only on the spot, so that they have not to be carried about or stored as dangerous goods. They cannot be kept for any length of time after they have been dipped into the liquid air, as the oxygen would be lost by the heat of the atmosphere. The products of combustion being in no way noxious, the workings may be entered immediately after firing a shot. This form of explosive is now largely used in non-gaseous coal and ore mines.

S.A. Railways and Harbours.

The following important new works were authorised during the month of July, 1918:—Cape Western Main Line: Provision of new sidings and stations at 188½, 198, 201, and 209½ miles. Klipplaat-Rosmead: Provision of additional bridge openings at 157M, 25C., Karee River. Amabele-Butterworth: Conversion of Great Kei Road bridge into a combined rail and road bridge. Caledon: Provision of improved coaling facilities. Bloemfontein: Provision of facilities for cleansing cattle trucks and dealing with live-stock. Sandhills: Installation of tablet instruments, signals, and provision of quarters for foreman. Eensgevonden: Provision of quarters for stationmaster. Sheepmoor: Provision of quarters for stationmaster, goods shed, loading bank, etc. Bloemfontein: Provision and installation of new machinery for workshops.

Suggestions for Saving Tin.

The Tin Section of the U.S. War Industries Board, after conferring with representative manufacturers of bearing metals, solder and other tin-alloy products, has published the following suggestions based upon experiments made by the U.S. Bureau of Standards:—(1) Many specifications for bearing metals call for virgin tin (Banca or Straits). A large saving of these high grades could be brought about by allowing the use of second quality pig-tin. Detrimental impurities could still be limited. There is no question but that the tin content can be reduced somewhat in all bearing alloys. In a few cases, such as for airplanes, crankshaft bearings, etc., it may not be feasible to reduce the tin content by any but a small percentage, whereas in other cases it can be cut down very considerably. (2) There is apparently very little excuse for using a 50-50 solder or higher tin solder for any purpose whatever except in the matter of appearance of the finished article, and in the present emergency this is of secondary importance. For hand-soldering with an iron 45-55 will answer for all purposes, but for most purposes 40-60 will be satisfactory. Wiping solder used by plumbers should not contain over 37½ per cent. tin, whereas many are now using 40-60. Can manufacturers and canners by adopting proper machinery can use 37½-62½ solder with satisfactory results. Very little solder of a higher tin content need be used in these industries. The possibility of using cadmium as a substitute for tin in solder appears promising. (3) It is also believed that the percentage of tin in most alloy castings is unnecessarily high. It has furthermore been found that aluminium, bronze, steel, brass or other materials can often be substituted in the manufacture of tin-alloy castings. Wherever possible the percentage of tin in the alloy should be reduced or another metal substituted.

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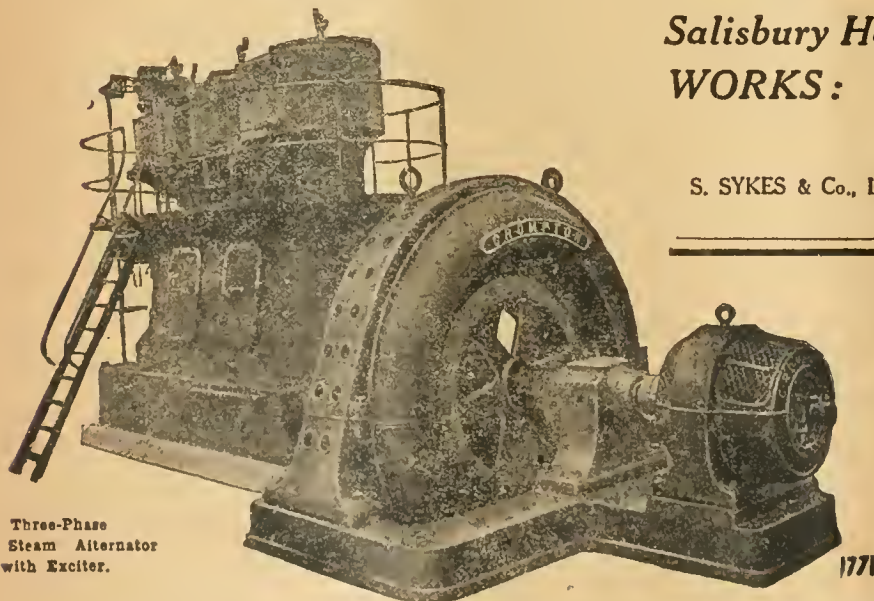
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THE WEEK IN THE SHAREMARKET.

Some Disappointing Features—Rise of Government Areas—Fall of African Farms.

ON Saturday morning there was a quiet market, with an improvement in Van Ryn Deeps, Springs and Government Areas. A big buying order for Pretoria Cements was put through at 72s., 72s. 6d. and 73s. Modder East Options were firmer, while the parent stock came easier. Nothing was done in the three senior companies. Monday, being the Jewish Day of Atonement, the Stock Exchange was closed. The good news from the front of the American success might reasonably enough have led to an active market on Tuesday morning. The contrary, however, was the result; business was slack and prices inclined to be lower. Prices firmed up somewhat at the close, with sales of Government Areas at 89s. 6d.; New Modders at £26 5s., and Modder B. at £8 2s. 6d. African Farms were easier, with sales at 15s. Wednesday's call showed on the whole more weakness than strength. While Government Areas were the turn harder once more, Springs and Van Ryn Deeps fell off, also African Farms, Leeuwpoots, Glynn's Lydenburgs and Zaaiplaats. Other stocks were unchanged. The market was quiet throughout the day, the chief features being the rise of Government Areas to 91s. and a fall of African Farms to 14s. 6d. On Thursday morning there was a further advance in Government Areas. Prices on the whole came slightly better except in African Farms, which had a further drop. The whole Modderfontein section was passed over without a single deal being recorded. Springs West and their Options were quoted for the first time. In outside stocks Monteles came in for a bad setback during the week, the lowest point reached being 21s. Various reasons are given, from mistakes to the expense of removing the overload. The following sales were noted: Monteles, 28s. to 21s., the last price being 24s. for odd lots; Uityk G.M., 5s. 3d.; Union Tins, 5s.; Sakalavas, 11s. and 10s. 6d.; Mauss Syndicate, 25s. odd lots; Makanyene Diamonds, 27s. 6d. odd lots; Phoenix, 11d.; New Farms, 2s. 1d.; West Springs, 24s. to 25s.; Options, 10s. 3d. to 10s. 6d. Buyers and sellers: Union Mica, 9s.—10s.; Henderson's Estates, 4s. 6d.—4s. 9d.; Compound Diamonds, 2s. 6d., seller; Mauss Syndicate, 25s. to 30s.; Makanyene, 30s., buyer.

The following alterations in prices took place at Friday's call:—Sales: African Farms, 16s. 8d. and 16s. 9d.; Brakpans, 77s.; Hume Pipes, 33s. 6d.; Modder East four-year Options, 8s.; New Eras, 10s. 3d.; Randfontein Deeps, 4s. 3d.; Sub Nigel (5s. paid), 12s. 3d.; Wit. Deeps, 8s.; Leeuwpoots, 37s. Buyers and sellers: City Deeps, 51s. 6d.—52s. 6d.; Consolidated Mines Selections, 25s. 9d.—26s.; City and Suburbans, 8s. 6d.—8s. 9d.; Cloverfields, 9s. 4d., buyer; Modder Bs., £8 3s. 6d.—£8 4s. 6d.; Modder Easts, 21s. 9d.—22s.; three-year Options, 6s. 9d.—6s. 10d.; New Modders, £26 7s. 6d.—£26 12s. 6d.; Rooibergs, 10s. 6d., buyer; Sub Nigel, 27s. 3d.—27s. 6d.; Alkalis, 40s.—45s.; West Springs, 25s. 3d.—25s. 6d.; Options, 10s. 9d.—11s.; Zaaiplaats, 17s. 7d.—17s. 9d.

	Fri. 13th.	Sat. 14th.	Tues. 15th.	Wed. 16th.	Thurs. 19th.
African Farms	15 3*	15 7	15 6	14 9*	14 3
Anglo-Amer. Corp.	31 0*	33 0†	—	—	—
Apex Mines	7 3	7 0*	7 1*	7 1*	7 1*
Aurora Wests	9 0*	9 0*	—	9 0*	9 0*
Bantjes Consolidated	3 0*	3 0*	3 0*	3 0*	3 1
Brakpan Mines	75 6*	77 0	77 0	76 0	75 6*
Breyten Collieries	—	10 0*	—	10 0*	—
Brick and Potteries	3 9*	3 9*	—	3 9*	3 9*
British South Africa	—	—	18 6†	16 6†	16 6†
Bushveld Tins	0 11	0 10*	0 9*	1 0†	0 10
Cassel Coals	30 0†	30 0†	—	—	29 0†
Cinderella Cons	3 9*	—	3 6*	3 6*	—
City and Suburbans	7 6	7 3*	7 9	8 3	8 3*
City Deeps	—	50 0*	51 6*	51 6*	52 6
Cloverfield Mines	9 0*	—	—	—	9 0*
Clydesdale Collieries	18 9*	—	—	18 0*	18 0*
Concrete Construction	5 6*	—	6 0†	6 0†	6 0†
Con. Investments	19 9*	19 9*	19 9*	19 9*	19 6*
Con. Langlaagtes	—	17 6*	18 0*	—	—
Con. Main Reefs	12 6*	12 6*	12 6*	12 0*	12 3
Con. Mines Selection	25 6*	25 6*	25 9*	25 6*	25 6*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri. 13th.	Sat. 14th.	Tues. 15th.	Wed. 16th.	Thurs. 19th.
Coronation Collieries	40 0*	—	40 0*	40 0*	40 0*
Coronat on Freeholds	1 5†	1 2*	—	1 2*	1 1*
Coronation Syndicates	2 0†	2 0†	—	—	—
Crown Diamonds	4 0*	4 0*	5 0	4 6*	5 0†
Crown Mines	40 0*	40 0*	41 3*	40 6*	40 6*
Crown Mines Deb.	£99*	—	£100*	£100*	—
Daggafontein Mines	23 0*	23 0*	21 3	24 0*	23 9*
Do. Options	4 6*	5 3†	5 3†	5 3*	5 0
Durban Road	—	10 0*	10 0*	10 0*	10 0*
Durban Road, Deeps	—	—	7 0*	7 0*	—
East Rand Coals	2 2*	2 2	—	2 2*	2 2
East Rand Deeps	—	0 11*	0 11*	0 11*	0 11*
E.R. Minings	18 0†	18 0†	18 0†	18 0†	18 0†
East Rand Props.	4 6*	4 6	4 6	4 3*	4 6*
East Rand Debentures	£60*	£61*	£61*	£61*	£61*
Eastern Golds	1 3*	1 3	1 3*	1 3*	1 3*
Frank Smith Diamonds	3 2*	3 2*	3 3	3 5	3 4
Geduld Props.	37 9*	37 9*	37 9	38 0	38 0
Glencairn	—	—	2 0	2 0†	1 6*
Glencoe Collieries	—	6 0*	6 0*	—	6 0*
Glynn's Lydenburgs	25 0*	25 0*	25 6	23 6*	23 6
Government Areas	87 9*	89 0	89 3	8 9 9	92 3
Jhb. Bd. of Executors	27 6*	27 6*	27 6*	28 6*	29 0*
Jupiters	3 10*	4 2	4 0*	—	4 0*
Klerksdorp Props.	2 10*	2 9	2 9*	2 9*	3 0†
Knight Centrals	4 4*	4 4*	4 4*	4 5	4 6*
Knights Deeps	5 0*	5 0*	5 0*	6 6	5 0*
Lace Props.	11 7	11 7	12 4	11 10	12 0*
Leeuwpoot Tins	37 0	37 6*	38 6	36 3*	36 0
Lydenburg Farms	9 2*	9 3*	9 4*	9 4	9 3*
Main Reef Wests	2 10*	2 10*	2 10*	2 10*	2 10*
Meyer and Charltons	86 0*	86 0*	—	—	86 0*
Middelvllei Est.	1 2*	1 3	—	1 3*	—
Modder B's	160 0*	161 6*	160 0*	161 0*	161 6*
Modder Deep	150 0†	149 6†	148 6†	—	147 6*
Modder Easts	22 6	21 9	21 6	21 7½	21 6*
Do. Options (3 years)	6 9	6 10*	6 7*	6 9	6 7*
Do. Options (4 years)	7 9	7 11*	7 8*	7 10*	7 9*
Hume Pipes	32 6	32 0*	—	34 0	33 6*
Langlaagte Estate	20 0†	20 0†	—	—	20 0†
Natal Navigation Co.	18 9*	18 9*	19 0*	19 0*	19 0*
National Banks	—	—	£14*	£14½	—
New Boksburgs	1 6†	—	—	—	—
New Eland Diamonds	24 0*	24 6*	24 0*	25 0	—
New Era Cons.	10 0*	10 1*	10 0*	10 0*	10 1
New Geduld Deeps	6 0*	5 9*	5 9*	5 9*	5 9*
New Herjots	12 6*	13 0*	—	13 0*	12 6*
New Kleinfonteins	14 9†	14 6	14 6	14 6	14 9
New Modderfontein	£26*	£26½*	—	£26*	£26½*
New Primrose	4 0*	—	—	—	—
New Uniteds	5 6*	5 6*	5 6*	5 6*	5 6*
Nigels	—	4 6*	4 6*	4 6*	4 6*
Nourse Mines	17 6*	17 6	17 6*	—	17 6*
Premier Preferreds	—	145 0*	145 0*	145 0*	—
Pretoria Cements	73 0	73 0	72 6*	72 0*	72 6
Princess Estates	3 6*	3 6*	4 0†	4 0†	3 8*
Rand Collieries	—	3 9†	3 9†	3 9†	3 9†
Rand Klips	10 3*	10 3*	10 6†	10 0*	10 6*
Rand Nucleus	1 4*	1 4*	1 4*	1 3*	1 3*
Rand Select. Corp.	90 0†	86 3*	88 0	87 0*	87 9*
Randfontein Deeps	4 3*	4 6†	4 6†	4 3*	4 0*
Randfontein Est.	15 0*	15 0	—	14 7½	14 6*
Roberts Victors	—	—	6 0*	6 0*	6 0*
Rooibergs	11 0*	10 9*	10 9	10 10*	10 0*
Rooidepoort Uniteds	3 6	—	—	3 3*	3 3*
Ryan Nigels	—	—	2 7*	2 9*	2 6*
Shebbs	—	1 0†	—	1 0†	—
Simmer Deeps	1 9*	—	1 9*	—	1 9*
S.A. Breweries	27 6*	28 0*	28 6*	28 0*	28 0*
S.A. Lands	6 6*	6 8	6 9*	6 9	6 9
Springs Mines	70 6	71 0*	71 0	70 9	70 9
Sub-Nigels	26 9*	26 9*	26 9*	26 9*	27 0
Swaziland Tins	—	—	34 6†	—	—
Transvaal Lands	20 0*	20 6*	20 6*	20 0*	20 0*
Trans G.M. Est.	16 3*	16 0*	16 0*	16 0*	16 0*
Van Ryn Deeps	71 9	71 9	71 3	70 6	70 9
Village Deeps	15 0*	14 6*	14 6*	14 6*	—
Western Rand Estates	—	2 6*	—	—	—
Witbank Collieries	—	—	—	50 0*	50 0*
Witwatersrands	21 0†	—	21 0†	21 0†	—
Witwatersrand Deeps	9 0†	—	8 0*	7 9*	7 9
Woluhfers	3 9*	4 0†	3 9*	3 9*	4 0†
Zaaiplaats Tins	17 7	17 9	18 0	17 5	17 3*
Union 5 per cent.	£104	£104½	£104½	£104½	£104½
New States	19 9	20 0*	20 3*	20 0*	20 0*
S. Van Ryn	14 3*	14 3*	14 3*	14 6*	14 9
Do. Options	1 7*	2 6*	1 6*	1 6	1 6*
S.A. Alkali	37 6*	—	35 0*	37 0*	38 0*
Do. Reefs Def.	£15½*	£15½*	—	—	—
Standard Bank	—	—	£11½*	—	£11½*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—III.

Lessons for South Africa—The Electrification of the Chicago, Milwaukee and St. Paul Railway.

THE following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E.:

I SHOULD like to pass on now to the details of the locomotives given on page 191 of the *Transactions*, and would have liked to have cleared up one little uncertainty before making the detailed comparison I propose doing later with the Norfolk and Western locomotives designed for almost identical duty. The maximum tractive effort of these Chicago, Milwaukee and St. Paul engines is variously stated as 136,000 lbs., equivalent to 30.2 per cent. of the weight on the driving wheels, 132,500 lbs., equivalent to 29.5 per cent. and 36 per cent. of the weight on the drivers, equivalent to 162,000 lbs., this last figure corresponding to an input of rather more than 6,000 h.p., and an overload of probably 70 per cent. on the continuous capacity. Maximum tractive efforts as high as 40 per cent. of the weight on drivers have been recorded, *e.g.*, tests on the 4,000 h.p. Pennsylvania locomotives. This is of course an abnormally high figure, and one that is only possible at very slow speeds, but with heavy freight trains moving at slow speeds it would seem that, to protect the equipment, the former

raised this figure to the maximum tractive effort, corresponding to a co-efficient of adhesion of 0.36 in this particular case.

I do not understand the way the regenerative braking power is expressed in this table, viz., 89 per cent. of the weight on the drivers. It seems to me that, whether you are driving through a wheel or retarding through a wheel, the same factor of adhesion comes in. Perhaps Mr. Kirkland will explain. As far as one can see, the negative tractive effort could be just as much as the positive tractive effort, and neither more nor less, always provided of course there is a load to absorb it.

On the opposite page I have set out side by side the details given by Mr. Kirkland for these Chicago, Milwaukee and St. Paul locomotives, with corresponding particulars of the D.C. crank drive Pennsylvania passenger locomotives, and the Norfolk and Western split phase locomotives. The maximum tractive effort of the Chicago, Milwaukee and St. Paul engines is stated by inference as 162,000 lbs., corresponding, as has been pointed out, to 6,000 h.p. input. The maximum tractive effort on test of the Norfolk and Western engines was 180,000 lbs., and the motor equipments developed over 8,000 h.p. One cannot compare an essentially heavy freight locomotive with an express passenger locomotive, but the figures for the D.C. Pennsylvania locomotive are given for comparison with the passenger

	RAILWAY.		
	Pennsylvania.	Chicago, Milwaukee and St. Paul.	Norfolk and Western.
Class	4-4-4-4	4-4-4-4-4-4	2-4-4-2
Type	Articulated	Articulated	Articulated
Length of framing	64ft. 11ins.	112 ft.	105ft. 8ins.
Width overall	10ft. 6ins.	10ft.	10ft. 3ins.
Height to roof, trolley lowered	14ft. 8in.	16ft 8in.	14ft 9in.
Total weight in tons	157	288	270
Weight on driving axles, tons	100	225	220
Weight on pony axles, tons	57	63	50
Percentage weight on driving axles.. .. .	64%	78%	81.5%
Total wheel base	55ft. 11ins.	102ft. 8ins.	84 ft.
Fixed wheel base	7ft. 2ins.	10ft. 6ins.	11 ft.
Diameter of driving wheels	72ins.	52ins.	62ins.
Diameter of pony wheels	36ins.	36ins.	30ins.
Trolley voltage	650/750	3,000	11,000
Frequency	Continuous current	Continuous current	25 period single phase
Type of motor	Series	Series	3 phase
Normal operating motor voltage	600	3,000	725
Number of motors	2	8	8
Rated H.P. of motors	800/1,000/2,000	396/452	325/410 at 14 miles per hour.
Total rated H.P.	1,600/2,000/4,000	3,170/3,000	2,600/3,280
Tractive effort one hour rating	25,000 lbs.	81,000 lbs.	87,000 lbs.
Tractive effort 25% adhesion	50,000 lbs.	112,500 lbs.	110,000 lbs.
Miles per hour one hour rating	30	16.7	14
Normal maximum speed miles per hour	60	—	28
H.P. one hour rating, per ton	12.7	12.6	12.1

practice of designing electric locomotives so that the maximum tractive effort, corresponding to a co-efficient of adhesion of 0.25, would not overload the motors more than 75 per cent., needs some revision, and the figures quoted by Mr. Kirkland show that the General Electric Co. have

service engines of the Chicago, Milwaukee and St. Paul. The Pennsylvania locomotives were designed to start, accelerate and haul a 550 ton trailing load, nine Pullmans, on a 2 per cent. tunnel grade; the normal speed of these locomotives on the level was to be 60 miles per hour,

and they were to be safe at 80 miles per hour for the New York-Philadelphia run, which corresponds very fairly with the passenger traffic conditions described by the author. It would appear from the characteristic curves given on page 194 that these Chicago, Milwaukee and St. Paul passenger locomotives will exert a tractive effort of 35,000 lbs. at a speed of 30 miles per hour, and are therefore substantially larger than the Pennsylvania engines, but the figures given for the Norfolk and Western engines justify my statement that the author is incorrect when he refers to these G.E. locomotives as being the largest and most powerful in the world. I shall also show, further on, that they are not as powerful as the latest locomotives with which the Chicago, Milwaukee and St. Paul line is being equipped. I quote the Pennsylvania engines, because they are an interesting type, and have probably established a record for locomotive maintenance, as the following table for the year 1915-1916 will show:—

remark that nowadays catenary construction has been much simplified and thoroughly developed and standardised. It is of course simpler to deal with one contact line than two, but two do not present any insuperable difficulties, as instanced by the success of the Italian State Railway installation. I have no actual figures at the moment, but believe that train interruptions nowadays, due to contact line troubles, are a very small percentage indeed. Moderate train speeds, as would be the case out here, make for still further immunity from trouble. Regarding the sub-station equipment, it is not my intention to criticise the general arrangement described by Mr. Kirkland, but it may be of interest to members to briefly point out the respects in which these sub-station equipments differ from the later Westinghouse installations for the same line. The size of the units is approximately the same, 2,500 kva., 100,000/2,200 volt transformers with motor generator sets, consisting of two 1,000 kw. 1,500 volt D.C. generators direct

COST OF ELECTRIC LOCOMOTIVE MAINTENANCE, PENNSYLVANIA RAILROAD, 1915-1916.

Month and Year.	Mechanical.	Electrical.	[Total.	Total Locomotive Mileage.	Cost per Locomotive Mile. (Cents).
May, 1915	\$2,180-96	\$995-12	\$3,176-08	81,126	3-91
June, 1915	1,731-64	1,018-97	2,750-61	83,145	3-31
July, 1915	2,499-72	1,439-21	3,938-93	88,792	4-44
August, 1915	2,268-33	737-13	3,005-46	88,433	3-40
September, 1915	1,808-85	999-23	2,808-08	85,054	3-30
October, 1915	2,118-38	847-78	2,966-16	83,121	3-57
November, 1915	1,630-41	855-07	2,485-48	82,438	3-02
December, 1915	2,105-56	927-29	3,032-85	84,677	3-58
January, 1916	1,919-19	610-42	2,529-61	83,797	3-02
February, 1916	2,342-45	859-26	3,201-71	80,819	3-96
March, 1916	2,091-34	1,127-42	3,218-76	85,299	3-77
April, 1916	1,506-20	815-45	2,320-65	83,604	2-78
	\$24,203-03	\$11,231-35	\$35,434-38	1,010,305	3-51

NOTE.—Mileage figures made up with two locomotive-units considered as one locomotive. Costs include all charges for inspection, repairs and superintendence in electric zone; for work done on the electric equipment by steam locomotive shops; for material either purchased direct or through purchasing agent; and for freight except over Pennsylvania Railroad.

A comparative steam figure might be anything up to three times this cost. These double articulated locomotives, as the table shows, have a maximum rating of 4,000 h.p., each being equipped with two Westinghouse 600 volt D.C. field control motors, driving through cranks on to a jack shaft. They not only handle the heavy through trains on the 2 per cent. grades in the tubes, but operate at passenger speeds of 60 miles per hour. Additionally they also work on switching service. In regular service they start 850 ton trains on the 2 per cent. grades, and have a recorded draw-bar pull of 79,000 lbs. In actual practice, trains consisting of 14 all steel cars, weighing over 1,000 tons, have frequently been handled by one locomotive. Figure 2 shows the complete locomotive. On November 28th, 1914, these locomotives completed four years of service with the following phenomenal record:—Locomotive miles, 3,974,746; total engine failures, 45; total minutes detention to trains, 271; locomotive mile per detention, 88,328; locomotive mile per minute detention, 14,667. A fair average figure for steam practice would be 5,000 miles per locomotive failure. The electric locomotive was an important factor in the successful solution of the New York terminal problem of the Pennsylvania Railroad; it rendered possible the use of tube tunnels under the North River, for the purpose of reaching the heart of New York City, and increased the attractiveness of the magnificent Pennsylvania Station by eliminating the noise and smoke of the steam locomotives. There is now no steam locomotive operating in the electrical zone, the entire service of 500 trains daily being handled with Westinghouse locomotives as described. I do not propose to offer any comments on the overhead equipment, except to

connected to a 2,800 h.p., 2,200 volt, three-phase, 60 periods synchronous motor, operating at 514 r.p.m. with two exciters. The transformers have tubular tanks to economise in space, and are of the shell type in view of the inherently greater ruggedness of this construction as compared with the core type. The efficiency of the transformers is 98.6 per cent. at full load, temperature rise 40 degrees C. after 24 hours full load. The terminals of the transformers are of the well-known condenser type. The arrangement of

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the motor generator sets is the same as described by Mr. Kirkland, that is, the synchronous motor between the two D.C. generators and the starting arrangements with low tension taps is very similar. The overall efficiency of the motor generators is 92.4 per cent. at full load and 93.4 per cent. at 150 per cent. load. These figures are mentioned as in the discussion some doubt was expressed as to the possibility of the full load efficiency of approximately 92½ per cent. given in the paper. The principal difference in the equipment lies in the D.C. generators. The machines described by Mr. Kirkland are eight-pole, with, I believe, compound windings. The Westinghouse generators are designed for six poles, as this design presents the following advantages which are inherently favourable to improved operation and make the machines less liable to flash over:— Greater distance between brush arms; thicker commutating bars and mica, lower voltage per inch of commutator circum-

ference; lower reactance volts across brush; lower surface commutator speed. Further, in these machines by carefully adjusting the commutating pole air gap, it has been possible to eliminate shunts on the compole windings—experience having shown that machines provided with shunts are more liable to flash over on heavy overloads than when these are omitted and the correct commutating pole strength obtained once and for all by air gap adjustment. The difference in the design of these machines is reflected in the following table:—

	New Machines.	Existing Machines.
Number of poles	6	8
Diameter of commutator	37"	39"
Number of commutator bars	504	704
Thickness of commutator bar and mica	0.23"	0.174"

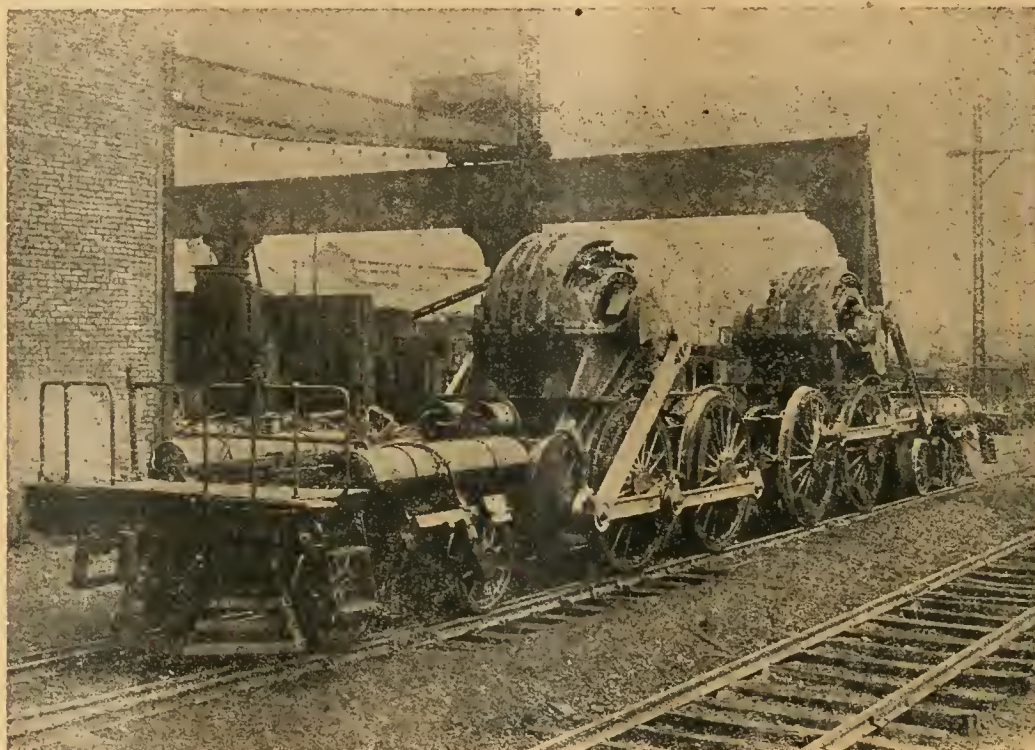


Fig. 1.

RUNNING GEAR, TWO 2,000 H.P. WESTINGHOUSE MOTORS, PENNSYLVANIA RAILROAD LOCOMOTIVE.



Fig. 2.

4,000 H.P. ELECTRIC LOCOMOTIVE, PENNSYLVANIA RAILROAD.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Mines Not in Buying Humour—Oils, Colours and White Lead—Iron, Steel, Copper and Brass—Timber and Building Material.

THERE is a little more life in the mining material market as between merchant and merchant, also brokers representing coast houses seem better employed. The fact is that quantities of various kinds of goods and materials arrive at the coast ports by sailing vessels and as the mines are not in a buying humour, an outlet has to be found for the overplus. Naturally the material most wanted does not as a rule come, therefore the others require some hustling to place at a profit. There is an absence of speculation and a conservative spirit amongst merchants engendered by the excellent war news—not to do much buying unless in the most essential mining requirements in demand. One example is that a firm has had material on New York harbour for the past eleven months which has been paid for, therefore the manager is not inclined to order more until there are reasonable prospects of getting orders from overseas delivered in Johannesburg. As regards the mines they are practically getting average monthly supplies, but in some cases part of the reserves are reckoned in the stocks already bought (but not delivered from overseas), as well as paid for by the importing merchants. However, although in most cases deliveries have been made from the manufacturing in America and Britain, yet they are delayed on the way owing to the shortage of shipping. In the Commercial Exchange one could often pick up a little newsy gossip, but now business is practically over well before 11 o'clock of a morning, and also people are less communicative. Nevertheless since the question of the great importance of gold has been under discussion, that subject often crops up. The merchants recognise that whatever assists the gold industry must of necessity increase business prospects with them.

OILS, COLOURS, WHITE LEAD AND TURPES.

According to the advices of a British manufacturer's representative here, information has been received that the export of linseed oil has been barred from Canada, also that the navigation of the St. Lawrence River will close a month earlier this year on account of the ice, consequent upon an earlier winter there. Turpentine is scarcer than ever, but there is said to be some on the way, which statement, however, lacks confirmation. In the meantime anything more than a bottle cannot for all practical purposes be obtained. For example, three indents for turpentine were put up on the buying boards of the Commercial Exchange without obtaining any tender. America has prohibited the export of cotton seed (salad) oil. The price for the best in Johannesburg is 140s. per case and seconds 90s. The last lot of olive oil received from Spain is practically finished, and it is problematical when to expect the next shipment from there; the price is 30s. per gallon. The oil and colour merchants keep selling as goods from overseas dribble in; that is, nothing is kept back at these high prices. However, there is no anxiety to sell, and preference is naturally given to old customers.

IRON, STEEL, COPPER AND BRASS.

The initial output specimens of pig iron are being shown in a leading draper's window in Church Street, Pretoria. A Johannesburg importer of iron and steel made a special journey to the capital for the purpose of inspecting the newly-made pig iron. He was pleased to handle and examine

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No. 3 of the grey colour, which he considered the best. It appears that a very anxious time was experienced at the Pretoria iron works during the initial stages, as the colours were disappointing and had to be toned down. However, the sponsors and manager never became disheartened and now, after a strenuous time, they feel confident that they will soon follow on with a commercial iron suitable for foundry work in the Transvaal. The price of £15 was mentioned, but not officially. Such a price compares favourably with the last available one for the imported iron of £22½ per ton. The imported bar iron is now acutely scarce, and it may be that the local ironworks could be assisted to find substitutes when they get sufficient pig iron for mixing purposes. Veereniging mild steel of all kinds has been recently risen from 45s. to 50s. per 100 lbs. Steel plates can be had in limited quantities at 90s. to 95s. per 100 lbs. They are very scarce indeed, and only supplies from America can relieve the position, and no one seems to have any idea when shipments can be expected. The coast ports are telegraphing Johannesburg for wire nails—the price being a secondary matter if only the right sizes can be had. Enquiries also come from all parts for bar iron and steel, but not a tithe of the orders can be executed, because stocks are not available. It also happens that the Transvaal iron smelters are not allowing so much to come into the general market, as the orders from the mines as well as for Government contracting work, almost monopolise the output. A decent parcel of brass and copper rods, tubes and sheets recently arrived at the coast for a Johannesburg firm. No. 8 fencing wire, also the barbed descriptions, are getting scarce in Johannesburg on account of the British and American Governments requiring them for military purposes. Galvanised pipe fittings are difficult to obtain. By the way, there were a few orders for piping placed this week for the mines on the Far Eastern Rand. The British factory price has risen for piping about 10 per cent., as the discount off

list prices is now only from 42½ to 45 per cent. A few shovels have been received lately; the square mouthed description are 150s. per dozen, and the round nosed ones 100s. to 105s. The demand is so great and continuous that the present supplies will soon be absorbed.

TIMBER AND BUILDERS' MATERIALS.

A splendid show was made of South African timbers at the recent exhibition at the railway department in Johannesburg, on behalf of the Governor-General's Fund. The different woods had been prepared by the railway workmen to perfection. Some were plain, but mostly polished, and it is only fair and just to remark that if our own woods can be made to look like they did, there must of necessity be a great future for them, not only in the building trade but for furniture manufacturing. Baltic deals are not over plentiful, but sufficient for present needs as more are expected during this month and next also. The cables from Norway and Sweden go to show that whilst they are not unduly pressing business, yet quotations are always available, and the latest communications give the impression that the tendency is easier. This may be because merchants are holding off somewhat, because, whilst anxious to keep sufficient to run their business with, they are shy in running the risk to pile up stocks at these values. Business is only fair, the country orders are leading now, but the town and reef are quieter. The Municipal question as to the controversy between Brakpan and Benoni separating is upsetting business in that direction. If an understanding can be arrived at, it is expected the demand for that portion of the Eastern Rand would soon make itself felt again. The demand for bricks is still pronounced, especially for the

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better kinds for central buildings. Orders have been sent to Olifantsfontein for certain bricks, which is a long distance away, seeing what a number of Johannesburg kilns are now working. We have also received a consignment of tiles from Pretoria at £45 per ton, which is the highest figure mentioned in these notes so far. The cement supply is still indifferent, as the Government demands take a big slice of that manufactured. This could be quickly obviated, providing the machinery, already on order for a long while, could be obtained from oversea. Blue lime is not any too plentiful, because so much is being used in the place of cement. Of late there have been excellent consignments from Britain of hospital fittings and cast-iron enamel baths. There is a scarcity of waterproofing paste and similar compositions in connection with keeping buildings waterproof.

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BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 65s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 8s. 6d. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. to 15s. O.M. gallon; white lead, 1s. 6d. per lb. and 1s. 3d. in big lots; turpentine, 110s. 2/4 1-5 galls.; 10—1's; 5-6 imp. tins, 120s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, $\frac{1}{4}$ in., 8s.; do., mirror, 8s. 6d.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £49; local, £31 to £31 $\frac{1}{2}$ per ton; tallow (local), 8 $\frac{1}{2}$ d. per lb.; paraffin quotations unobtainable; petrol, 39s. 2d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 42s. 6d. per case; cylinder, 37s. 6d. to 42s. 6d.

CHEMICALS.—Mercury, £40 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 1lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6 $\frac{1}{2}$ d. lb.; plumbago crucibles, 6 $\frac{1}{2}$ d. per number; carbide, 100s. to 110s. 100 lb.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 60s. to 65s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20, 130s. 7/18, 170s.; tubing, 40s. to 45s. per 100ft.; keyholders, 4s. 6d. to 5s. each; round blocks, $\frac{3}{4}$ in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, $\frac{1}{2}$ in. and 3-16in. round iron, 95s. to 100s.; $\frac{3}{4}$ in. do., 85s.; $\frac{1}{2}$ in. steel, round, 80s.; $\frac{1}{2}$ in. round iron, 75s.; do. steel, 72s. 6d.; $\frac{3}{4}$ in. round iron, 72s. 6d.; do. steel, practically none in town; $\frac{1}{2}$ in. round iron, 65s. to 67s. 6d.; $\frac{3}{4}$ in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, $\frac{1}{2}$ in. diameter, 2s. to 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; $\frac{3}{4}$ in. diameter up to 3in. long, 1s. 9d. lb.; $\frac{1}{2}$ in. dia., 1s. 6d. 3 $\frac{1}{4}$ in. and up long 1s. 6d. lb.; $\frac{1}{2}$ in. dia. up to 2 $\frac{1}{2}$ in. long, 77s. 6d. 100lb.; $\frac{1}{2}$ in. dia. and 2 $\frac{1}{2}$ in. up long, 75s. per 100lb.; $\frac{3}{4}$ in. diameter up to 2 $\frac{1}{2}$ in. long, 85s. per 100lb.; $\frac{1}{2}$ in. dia. 2 $\frac{1}{2}$ in. and up long, 60s. per 100lb.; $\frac{3}{4}$ in. diameter, 2 $\frac{1}{2}$ in. and up long, 55s. 100 lb.; $\frac{1}{2}$ in. and 1in. diameter, same price as $\frac{3}{4}$ in. diameter; nuts, $\frac{3}{4}$ in., 1s. 3d. per lb.; $\frac{1}{2}$ in., 85s.; $\frac{3}{4}$ in. 95s.; 1 $\frac{1}{2}$ in. and 1 $\frac{1}{2}$ in., 85s.; 1 $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 45s.; rivets, 3-16in., 1s. 6d. lb.; $\frac{1}{2}$ in., 5-16in., 1s. 6d. lb.; 7-16in., $\frac{3}{4}$ in., 1s. 3d. lb.; $\frac{1}{2}$ in., 75s. to 80s.; $\frac{3}{4}$ in., 72s. 6d.; $\frac{1}{2}$ in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s., 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5 $\frac{1}{2}$ d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

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426. The Sopwith Aviation Co., Ltd., and Harry Alexis Kauper.—Improvements in and relating to means for synchronising the firing of a gun with the rotation of a propeller upon aeroplanes.
427. Nathan Harrop.—Improved means for the production of carpets and the like.
428. William Walter Gowing.—Improved means for opening tins.
429. Joseph Bourdas Smith Booth.—Improvements in carburettors.
430. Alex John Gerrard.—Bundling machine.
431. John Bernard Thompson.—Improvements relating to tipping trucks and the like.
432. Robert Dobson.—Wash boiler (portable).
433. John Joseph Atmore.—An improved torch for lighting fuses for blasting and the like.
434. Edwin Clinch.—An improved adhesive composition of matter.
435. Naamlooze Verinootschap.—Process for the manufacturing of a product substituting ebonite, bacalite, and such like materials.
436. Walter Henry Drake.—Process of an apparatus for forming articles from pulp.
437. John Ernest Jones.—Improvements in mortar boxes for stamp mills.
438. The Electric and Ordnance Accessories Co., Ltd.—Improvements in or relating to regulating or controlling systems for electric motors.
439. Alexander Wink Grant.—Improvements in mops.
440. Alexander Wink Grant.—Improvements in mop frames.
441. Arthur Stead.—Process for the treatment of mineral and other insoluble phosphates for the purpose of rendering their phosphate contents soluble in water and in other weak solvents.
442. Wilfred Brereton Crofton.—Hydraulic change speed gear.
443. Louis Etienne Tissier.—Improved process for carbonising wood.
444. Pedro Celestino Saccaggio and Frederico Alejandro Lagrange.—Improvements in and relating to spark arresters.
445. Duncan McEwing Patrick.—Improvements in disconnectible links and hooks for chains.
446. Jean Stephanus Rochelle de Villiers and Julius Lewis Prager.—Petrol filter for internal combustion engines.
447. Jack Kuny.—A new or improved distemper water paint, or analogous preparation and process of manufacturing the same.
448. Jack Kuny.—An improved paint and process of manufacturing the same.
449. William Stephen Hobson.—Improvement in bearings for the axles of trucks and like vehicles.

450. Leslie Conolly.—Improvements in yokes.
451. Marks Harris and Edward Hart.—Improvements in means for jointing wooden members such as parts of furniture.
452. Percy Edmund Brown.—Goddard's improved beehive and frame.
453. Ralph Hush.—Improvements in mills or machines for grinding or pulverizing ore and other materials.
454. Frederick Charles William Ingle and Lewis Duke Henderson.—Improvements in shock-absorbing attachments for Jack Hammer drills and the like.
455. William Falconer Smith.—Improvements in means for packing eggs and other fragile articles for transport or storage.
456. Edgar Arthur Ashcroft.—Improved process and apparatus for the treatment of potash rocks with salts for the extraction of potash.
457. Johannes Willem van Aardt and Lodewijk Johannes Bomver van Aardt.—A new and improved automatic apparatus for use on mine skips, mine cages, lifts, hauling trucks, railway carriages, or the like.
458. Benjamin Richard Jones.—Apparatus to prevent skips from running away in incline shafts.
459. William Hugh Nicholson.—A new or improved method and means for the production of power.
460. Arthur Thackeray Edwards.—An improved method of making driving belts, bands, and the like of the kind formed of woven wire fabric and rubber or the like.
461. Alfred Bartholomew Edwin Bolton.—A new Fireless Cooker.
462. Frederick Bolton.—Improvements in the manufacture of reinforced concrete structures.
463. Samuel Thomas Gresham.—Improvements in "Keeps" for axle-boxes for locomotives.
464. Frederick Lionel Rapson.—Improvements in or relating to lifting jacks and the like for use on motor road and other vehicles.
465. Campbell Onderkirk Rogers.—Improvements in and relating to drain cocks for steam engine cylinders and the like.

Leeuwpoot (African Farms) Tin Mines, Limited.

(Incorporated in the Transvaal).

Declaration of Interim Dividend No. 4.

NOTICE IS HEREBY GIVEN that Interim Dividend No. 4, at the rate of seven and a half per cent. ($7\frac{1}{2}$ per cent.), One Shilling and Sixpence (1s. 6d.) per share, has this day been declared, payable to Shareholders registered at the close of business on Monday, 30th September, 1918.

The Transfer Books of the Company will be closed from the 1st to 5th October, 1918, both dates inclusive.

By Order of the Board,

O. F. BROTHERTON,
(for the Witwatersrand Township Estate and Finance Corporation, Ltd., Secretaries.)

Head Office: The Jeppe Arcade
- Commissioner Street,
(P.O. Box 5036), Johannesburg.
14th September, 1918.

Transvaal Gold Mining Estates, Ltd.

(Incorporated in the Transvaal).

Five Per Cent. First Mortgage Debentures.

The interest due on the 1st October, 1918, will be paid against presentation of Coupon No. 17:

In London: At the office of the Company, No. 1 London Wall Buildings, E.C. (2).

In Johannesburg: At the Transfer Office of the Company, 4th Floor, The Corner House.

Coupons must be left FOUR CLEAR DAYS for examination, and may be presented at the Johannesburg Transfer Office any day (Saturdays excepted) between the hours of ten and one, and two and three. Coupons paid by the Johannesburg Office will be subject to a deduction of Union Income Tax.

Forms of application for listing the Coupons and for the declaration required to comply with the Trading with the Enemy Act, 1916, may be obtained at the Transfer Office of the Company.

By Order,

TRANSVAAL CONSOLIDATED LAND AND EXPLORATION
CO., LTD.,
Secretaries.
Per C. L. READ.

Head Office: The Corner House,
Johannesburg.
16th September, 1918.

WM. JOHNSTON, Hardware Manufacturers' Representative,

SHOWROOM AND HEAD OFFICE:

President Buildings, c/o President and
Von Brandis Sts., JOHANNESBURG.

P.O. Box 5580.

Telephone 2296.

Telegraphic and Cable Address: "Glasspicks," Johannesburg.
Code: A.B.C. 5th Ed.

Also at Capetown, Port Elizabeth, East London and Durban.

REPRESENTING:

BRITISH—

Wm. Newman & Sons, Ltd.
Birmingham.
Builders & General Brass Foundry.

Jackson, Elphicks & Co., Ltd.
Larkhall, Nr. Glasgow.
Porcelain Enamelled Baths and Basins.

Pegler Bros. & Co., Ltd.
Doncaster.
Brass Cocks and Fittings for Steam and Water.

Wallpaper Manufacturers, Ltd.
Smith & Butler, Ltd.
Harshill, Leeds, England.

Orme Evans & Co., Ltd.
Wolverhampton.
Wrought Steel Enamelled Ware, and Wrought Steel Enamelled Sinks.

Harrison & Co.
Birmingham.
Curtain Hooks, Rings, Brackets, etc.

Geo. Wolfe & Sons, Ltd.
Bathgate, Scotland.
Stamped and Hammered Steel Shovels.

AMERICAN—

The Stanley Rule & Level Co.
New Britain, Conn., U.S.A.
Bailey Planes, Levels, etc.

The Stanley Works.
New York, U.S.A.
Steel Butt and Ice Hinges, Bolts, etc.

Hart & Cooley Co.
New York, U.S.A.
Ventilating Registers, etc.

Trumont Manufacturing Co.
Roxbury, Mass., U.S.A.
Trunion Pipe and Chain Wrenches.

E. C. Atkins & Co., Inc.
Indianapolis, Ind., U.S.A.
Silver Steel Hand Saws, Mill Saws, etc.

The Cleveland Twist Drill Co.
Cleveland, Ohio, U.S.A.
Drills and High Speed Tools.

The Warwood Tool Co.
Wheeling, W. Va., U.S.A.
Picks, Mattocks, etc.

The United Handle Mills.
Singer Bldg., 149, Broadway, New York.

Ash Handles.
Hickory Hammer and Pick Handles.

The Gorham Cabinet Lock Co.
Warren St., New York, U.S.A.
Padlocks and Trunk Locks.

THE SOUTH AFRICAN

Mining Journal

AND ENGINEERING RECORD.

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Notes and News.

A full report of the speech from the chair by Sir George Albu at the annual meeting of the General Mining and Finance Corporation will appear in our next issue. The plight of the low-grade mines very seriously concerns this group, and Sir George Albu's remarks under this head are dealt with in our leading columns. To the other important questions referred to in the speech we hope to return next week.

* * * *

The new President of the Chemical, Metallurgical and Mining Society, Mr. H. Meyer, delivered his inaugural address last Saturday night and dealt with a multiplicity of questions connected with the industry. Prominence has been given in the daily papers to one extract from the address, and we hope in our next issue to do justice to the paper as a whole. Additional interest was lent to the meeting last Saturday night by a discussion on Dr. Haldane's latest views regarding the effect of coal dust on Rand mine dust. Dr. Watkins-Pitchford and Mr. Isaac Hodges contributed their views, and the latter made the suggestion that Dr. Haldane's theory should be put to the test on one of the gold mines. He thought the expense would be comparatively trifling. Dr. Haldane's paper, it may be remembered, was recently printed in our columns.

* * * *

Number 4 borehole, at a depth of 2,804 feet, struck reef three inches thick on shale contact. **Southern Van Ryn.** Borehole has been continued to a depth of fifty feet in the footwall shale. Details of the assay values will be published later when available.

* * * *

In view of the recent eloquent appeals by Mr. Wallers for education as being the crux of the industrial position, it is interesting to see from figures given by Sir R. N. Kotzé in his recently issued annual report that our mining men are realizing this. Thus the number of candidates for managers' and overseers' certificates has practically doubled in three years. This is greatly to the credit of the men, and we find it particularly gratifying inasmuch that we have in these columns for years past strenuously urged our readers in this direction. In this connection we congratulate Professor Yates, as we understand that of the managers' certificates issued by examination in 1917 nearly eighty per cent. were secured by men who had passed through his hands.

* * * *

Our Madagaséar friends may be interested to know that a well has been put down in the Californian fields to a depth of 2,125 ft. in exactly twelve and a-half days by the rotary drill, the hole commencing with a 17½-in. diameter. In one single day no less than 685 ft. of sub-strata were pierced, while the daily average was 170 ft. In every branch of engineering science (remarks the *Petroleum Review*) the past decade has witnessed enormous advances, yet in none has this progress been more pronounced than in regard to oilfield operations. The times when it took frequently twelve months (and much longer, sometimes) to get a well down to depth producing sands are fortunately passed, thanks to the now general adoption of the rotary system of drilling.

* * * *

Communications have been received by the Johannesburg Chamber of Commerce, drawing attention to the fact that no priority certificates are granted in respect of supplies by local authorities until the order has actually been received by the merchant to supply the goods. It is pointed out that this frequently involves the contractor in

all the expenses of preparing tenders, cabling, etc., and that if a tender is not accepted valuable time and money have been spent uselessly, and this is the case also if priority assistance is not granted. This applies to municipalities and other public bodies. Tenders are called for as in pre-war times, and the time allowed for tendering nearly always necessitates cabling, while the orders contain a cancellation clause if priority recommendation cannot be obtained. It is therefore recommended that important enquiries from such bodies as those mentioned should be accompanied by a definite statement that priority certificates will be obtainable for manufacture and/or shipping space. The committee supports these proposals, and has appointed a deputation to discuss the question with the Controller of Imports and Exports. A number of circulars have been received from the Controller of Imports and Exports, which have for the most part already appeared in the Press, relating to the following matters. The circulars can be inspected at any time on application at the Chamber, viz.:—(a) Imports from America: Orders for goods which appear on the American Conservation list and which are of the value of 10,000 dollars should not be placed in America until application has been made to the Local Priority Committee and the approval of the American Board in London has been received to the placing of the order. (b) Steel sheets for the manufacture of dairy utensils. (c) Hemp, jute and flax thread for boot, shoe and harness manufacturing. (d) Hoop iron steel bands and baling wire. (e) Ration permits.

The position of the West Springs Company is fully set forth in the first annual report of the company published this week. The directors have complied with Article 2 of

the company's articles of association as follows:—(1) By entering into an agreement with the Anglo-American Corporation of South Africa, Ltd., for the acquisition by the company of the mineral lease of the western portion of the farm Rietfontein No. 14 in the mining district of Boksburg. The lease in question has been duly ceded in favour of the company. (2) By adopting the benefit of an agreement of the 21st February, 1918, between the Anglo-American Corporation of South Africa, Ltd., and Springs Mines, Ltd., whereby the Springs Mines, Ltd., agreed to grant to the company, when formed, certain mining facilities by allowing the company the use of certain shafts and levels of Springs Mines, Ltd. The further agreement to be entered into with Springs Mines, Ltd., defining the terms and conditions on which the mining facilities are to be enjoyed, and the considerations to be given by the company therefore, is in course of preparation. The area leased by the company is as follows:—1,552 morgen 319 square rods on farm Rietfontein No. 14, equal to 2,235.65 claims. The consideration payable to the Government for the exclusive right to mine for precious metals underlying the above claims is a share of the annual profits (as defined by the Mining Taxation Act, 1910, Union, as amended by Act No. 24 of 1915) obtained by the company from the working of the lease area, such share to be calculated according to the following

formula: $y = 65 - \frac{65}{x}$, where x is the ratio of profits (as

hereinbefore defined) to recovery expressed as a percentage; and y is the percentage of profits payable to Government. A rental is also payable, which takes the form of the usual claim licences. This rental will be capitalised in the accounts until crushing operations commence. Thereafter the annual rental will be a charge to revenue and expenditure account. The above considerations are in addition to any taxation which is now or may hereafter be imposed by statute on the profits of mining. Under the mineral lease between the Government of the Union of South Africa and the Anglo-American Corporation of South Africa, Ltd., that company guaranteed the subscription in full of the initial capital of the company, i.e., £1,400,000, subject to a commission of 5 per cent. on the amounts actually paid up from time to time in respect of such capital. The mineral lease further laid down that 200,000 shares be offered for subscription at par to persons *bona fide* resident in the Union of

South Africa. This offer was duly made in a prospectus issued by the company under date of 15th June, 1918. The initial capital of the company has been duly subscribed and allotted as follows:—400,000 shares of £1 each fully paid up, £400,000; 1,000,000 shares of £1 each, 2s. paid up, £100,000. It is a condition of the lease that the holder of partly-paid shares may from time to time after the registration of the company, anticipate the requirements of the company for the payment of the balance owing on the said shares by taking up the whole or any part or portion thereof, and pay the balance owing on the shares so taken up, and if the whole amount unpaid on any such share be paid, the company shall issue such share as fully paid. It has been decided to immediately proceed with the sinking of two shafts on the property, and a considerable portion of the sinking equipment has already been purchased or ordered. Contracts have also been entered into for the erection of the housing accommodation at present required for the company's employees, and a native compound. The arrangement with Springs Mines, Ltd., by which that company has agreed to grant to the company mining facilities for the purpose of developing the property of the company, will come into effect as soon as the agreement as to working arrangements has been completed.

* * * *

The President of the Chamber of Mines dealt very fully with white labour conditions at the quarterly meeting of the Chamber this week. In regard to the acceptance by the men of the latest offer of the industry, Mr. Wallers said: "The fact that that offer has been accepted on a ballot bears, I think, satisfactory testimony to the Chamber's policy in the past three years of discussing frankly with the men the position of the industry, placing the facts on the table, and inviting them to share the responsibility of deciding what is the best course to be taken in the particular circumstances under consideration. Compared with the attitude that existed a few years ago between employer and employed—as I ventured to say in a recent speech—that amounts to an industrial revolution in the affairs of this industry, and a revolution of the right type, a quiet and definite change of thought. The further outstanding fact that is shown by the ballot, is, I think, that the men have appreciated our position; and we who have more particularly represented the industry at those conferences can testify to the increasing sense of mutual responsibility and, in my opinion, the thorough justification of the confidence that has been placed in the men's attitude. The ballot has shown, too, that although the 'swing of the pendulum' under the law of supply and demand is at present in favour of the men, that, as the result of the facts having been placed before them, they have not endeavoured to exact the full toll under that law; and further, that they are prepared to bear a proportion of the increase in the cost of living. It is true if the men had decided to exploit the principle of supply and demand to its full extent, it would have reacted very seriously on a large section of the workers, many mines would have to close down, and although a certain proportion of them might have been earning higher wages, a large number would have been thrown out of employment, and the whole community very adversely affected. None the less, the situation required a very true understanding by our employees of the effects of any such action of theirs on their less fortunate fellow-workers and on the community as a whole, and, therefore, it is that I desire on behalf of the industry to express our appreciation of that sense of responsibility which the ballot has shown has actuated them." It is noteworthy in this connection that, lecturing at Benoni, Mr. Wallers pointed out that a real and permanent improvement of relationship of employer and employed must be founded on some basis other than a cash basis. Without minimising the importance of the wages question, he emphasised that there were other things more important in working and living conditions and in the creation of a proper industrial atmosphere. The new spirit born of vast sacrifices made by others for us must surely have its effect upon our attitude and our sense of responsibility to one

another. This changed attitude must have a permanent effect in the reconstruction of the industrial world on vastly altered and vastly improved lines. Referring to industrial conditions on the Rand, Mr. Wallers said: We have realised that it was right that the workers' status should be recognised and that their freedom and opportunity should be greater. We have realised that a proper and closer organisation on both sides is essential, and that the condition precedent to sound industrial affairs is that both employer and employed should be thoroughly well organised, not for the purpose of a test of strength—because that is the crudest and stupidest form of settlement—but in order that joint counsels may prevail and that both sides shall have a thorough and deep sense of their own responsibility. In regard to the cost of living, he went on to say the industry had tried to meet the hardship amongst men as fully and considerately as possible, and that the loyalty of the men in accepting the position was fully realised. In conclusion, he said the heart of the whole matter was a fuller educational system. No permanent solution of industrial difficulties could be found without it, and with it they would all find that ever-increasing sense of responsibility to one another upon which they must lay hold if they were to succeed. In reply to a question he said the Chamber was doing its best to combat and eliminate profiteering.

* * * *

An extraordinary general meeting of the Klerksdorp Proprietary Company will be held immediately after the termination of the annual general meeting, convened for 3 p.m. on December 2, 1918, for the purposes following, namely: To consider and, if deemed fit, to pass resolutions to the effect that the capital of the company be reduced from £50,000 divided into 200,000 shares of 5s. each (whereof 188,889 are issued and fully paid up, and the remaining 11,111 are held in reserve) to £23,611 2s. 6d., divided into 188,889 shares of 2s. 6d. each, and that such reduction be effected by cancelling the whole of the said 200,000 shares, and by returning to the holders of the said 188,889 issued shares capital to the amount of 2s. per share, and by issuing in part substitution for the said 188,889 existing shares 188,889 new shares of 2s. 6d. each, fully paid up, and by cancelling the balance of the said present capital of £50,000. No regard shall be paid to fractions of shares, and all fractions of new shares shall be sold by the directors, and the proceeds thereof, after deduction of any costs of realisation shall be paid to the shareholders entitled thereto.

* * * *

The *Gazette* publishes the quarterly bank statements for the period ending June 30 last at a moment when public attention is being prominently drawn to the impending Union Loan. The statements bear renewed evidence to the rapid accumulation of bank deposits, which are largely in excess of the opportunity for investment. In the three months ending June 30 the total deposits at the banks increased by no less than £2,553,000, and in the six months ending June 30 by very nearly seven millions sterling. The following statement has been prepared to indicate the position:—June 30, 1918: Deposits, £58,809,639; advances, £38,393,309. December 31, 1917: Deposits, £51,923,639; advances, £35,841,608. June 30, 1914: Deposits, £33,305,186; advances, £31,170,248. It will be seen that deposits have increased since the pre-war date (June 30, 1914) by no less than £25,500,000, or 76·5 per cent., while advances made by the banks to their customers have grown by £7,223,000, or 23 per cent. only. In 1914 the advances to customers amounted to 93½ per cent. of the total deposits. To-day the proportion is only 65 per cent. Hence it may be said that if the advances on June 30 last had been in the same ratio to deposits as in June, 1914, they would have totalled £54,958,000, as against the actual figure of £38,393,309. In other words, it is a fair inference that there is well over sixteen and a half millions sterling locked up in the banks to-day which in normal times would be profitably employed.

TOPICS OF THE WEEK.

THE CRISIS IN GOLD MINING.

TESTIMONY to the seriousness of the crisis in the gold mining industry was given this week by the President of the Chamber of Mines and by Sir George Albu at the General Mining meeting. Naturally, the major portion of the speech made by Mr. Wallers at the quarterly meeting of the Chamber of Mines was devoted to the subject. Mr. Wallers must be a little tired of reiterating the facts by now, and he confined himself to a brief review of the situation to-day and of the Transvaal gold output for the eight months ended August 31. The output for the corresponding period of last year was £24,983,236, showing a decrease in our gold production for the first eight months of this year of £1,315,694. In the same period the working costs showed an increase of £468,698, and the working profit a decrease of £1,623,896. That, said the President, was the position broadly from the point of view of the gold mining industry as a whole, and it was sufficiently serious. But when the condition of individual companies were considered the position was still more grave. Of the 49 companies whose output was included in the total, six were making an actual working loss, and fifteen showed a small working profit. But standing charges in the nature of obligations with regard to taxation, miners' phthisis compensation, allowances to men on active service, and debenture liabilities, turned the small working profit into actual loss. Various methods of relief had been put forward, and an expert committee to investigate the subject had been appointed in London. The Chamber's recent suggestion before the Select Committee on the low-grade mines was in the direction of relief in costs, with particular application to the reduction in the cost of realisation. So far they had received no further information as to the fate of the suggestion, but the figures showed that for a considerable number of companies the position was growing increasingly acute. Mr. Wallers added: "We have really hung on remarkably well, and shall concentrate all our energies in continuing to do so in the interests of all concerned. There is, however, the fact that for some companies, at any rate, and under existing conditions, the end is growing very near; it would be a pity if the actual closing down of some of the mines was required to bring home our real position." To this very plain and unequivocal statement of the case Sir George Albu made a very trenchant addition on Thursday. He pointed to the fact that they had been informed repeatedly by the Home Government that it was vitally necessary in the interests of the Empire that the gold output should be maintained at the highest possible level. That this might be done, it was obvious, he declared, that some form of relief for those mines rendered temporarily unprofitable owing to war conditions was imperative. He wanted to sound a final note of warning and to urge the Imperial authorities—since they were the only body to whom, under present conditions, they could look for relief—to move in the matter before it was too late. The question as to the particular form of relief, whether it should be by remission of the gold realisation charges, or by subsidising in some shape or other the poorer mines, had at the present acute stage become of secondary importance to the urgent necessity for such relief—no matter of what nature—to be forthcoming immediately and to be of such a substantial character as to be of real assistance. That was the position, stated plainly; and surely, he asked, with the struggling mines which constituted the bulk of the gold producers of their group, they should be in a position to judge. Indeed, Sir George's recital of the difficulties with which the mines of his group have had to contend presents a striking picture of Rand industrial conditions to-day. His speech and that of the President of the Chamber of Mines afford unmistakable proof of the present grave crisis in the industry.

NEW MODDER POSITION AND PROSPECTS.

THE report of the directors of the New Modder for the year ended 30th June, 1918, states that the area of the property remains as last reported, viz., 1,301·0771 mining claims, freehold of a portion of the farm Modderfontein No. 17, in extent 1,200 morgen 366 roods and 4 water-rights. In last year's report particulars were given of the "Bewaarplaats Moneys Application Act, 1917," and the estimated amount accruing in terms thereof to this company from the proceeds of Bewaarplaats on portion of the farm Modderfontein No. 17, of which it is the freehold owner. The amount received from the Government in this connection to date is £62,537 12s. 4d. Shareholders have been kept duly informed through the press and the quarterly reports as to the progress made with the erection of the new reduction plant and the commencement of milling operations thereat on a small scale in April last, which accounts for the increased tonnage crushed during the months of April, May and June. They have also been informed as to the progress made in connection with the construction and shipment of the remaining portion of the winder, also of its arrival at Durban and its delivery on the mine. Pending the arrival of the main winder, advantage was taken of the temporary hoist to supply a limited quantity of ore to the new mill, which arrangement will be continued until the new engine is erected, which it is anticipated will be completed at the end of September and running at the commencement of October. In view of existing conditions the results for the year must be considered satisfactory, the tonnage milled at 684,100 tons and the working profit of £833,263 15s. 9d. showing increases of 27,400 tons and £48,246 7s. 6d. respectively. The yield at 45s. 7d. is an increase of 2s. 3d. per ton milled for the year, whilst the working costs show an increase of 1s. 10d. per ton milled, due principally to the constantly increasing cost of stores, etc., owing to the war, as well as abnormal expenditure required to bring the new section of the mine into condition for the increased scale of operations. The tonnage developed for the year amounted to 823,500 tons of an estimated value of 8·1 dwts. per ton. The ore reserve has been re-measured and re-valued, and amounted to 9,000,000 tons averaging 8·6 dwts. per ton, which is an increase both in the tonnage of 85,600 tons and value of 1 dwt. To the amount of working profit of £833,263 15s. 9d. has been added £17,613 14s. 9d., being the difference between certain items of sundry revenue and expenditure enumerated in the working expenditure and revenue account, making a total profit of £850,877 10s. 6d., which has been carried to appropriation account. This amount, together with the balance of £354,905 13s. 3d. unappropriated at the commencement of the year and £181 13s. 7d. in respect of forfeited dividends making a total of £1,205,964 17s. 4d., has been dealt with as follows:—Capital expenditure: Development and equipment, £264,992 14s. 7d.; annuity in respect of undermining rights leased from Government, £17,310; less owner's share of Bewaarplaats moneys, £62,537 12s. 4d.; Government taxes for the year ended 30th June, 1918, £99,566 17s.; adjustment for previous year, £11,139 5s. 1d.; dividends Nos. 23 and 24, £568,750; total, £899,221 4s. 4d.; leaving a balance unappropriated at 30th June, 1918, represented by cash, British war loan and cash assets, less liabilities, of £306,743 13s. This balance is made up as follows:—Shares in co-operative concerns, £7,145 17s.; stores and materials, £154,297 9s. 3d.; sundry debtors and payments in advance, £15,789 18s. 9d.; ore at grass suspense account, £1,457 6s. 10d.; Rand Mines Power Supply Co., Ltd. (compressor account), £55,386 6s. 11d.; cash on hand and British War Loan, after allowing for liabilities, £72,666 14s. 3d. Details of the amount of £264,992 14s. 7d. expended on development and equipment will be found in the manager's report. Of the amounts authorised by the board in connection with the present programme of capital expenditure there remains an amount of £55,575 still to be expended, of which an amount, however, of £8,735 is provided for in the value of stores and materials above-mentioned. It will be noticed

that there is still a large amount of the company's funds invested in stores, which is due to the increased cost thereof and the necessity of carrying large stocks owing to the increased difficulty in obtaining same, and in order that mining operations may not be interfered with on this account. In the quarterly report for the three months ended 30th June, 1918, particulars were given of the Provincial Gold Profits Tax Ordinance, 1918. In view of the fact that this Ordinance was not gazetted until after the close of the company's financial year and that the Transvaal Chamber of Mines proposes, on behalf of the gold mining industry, to take legal action with the view of testing the authority of the Transvaal Provincial Council to levy such taxation, no provision has been made in the accounts submitted for this taxation. Two dividends, Nos. 23 and 24, of 18½% and 21½% respectively, were declared free of income tax by the directors during the year, absorbing £568,750. In accordance with the "Trading with the Enemy Act, 1916" (Union of South Africa) the dividends due to enemy shareholders in respect of dividends Nos. 22 and 23 were handed over to the Custodian of Enemy Property.

Falcon Mines.

The feature of the progress report for the six months ended March 31 is the substantial advance in working costs foreshadowed in the annual report. Here are some comparative figures:—12 months to June 30, 1917, 35s. 5d. per ton; 3 months to September 30, 1917, 39s. 11d. per ton; 6 months to March 31, 1918, 47s. 8d. per ton. In the last-mentioned period the production of fine copper was 1,758·6 tons and gold 18,542 ozs.; in the September quarter 961·7 tons of copper and 9,923 ozs. gold were recovered. For the six months the working profit, with copper at £95, was £47,432, while for the preceding three months the working profit was £45,806. Ore reserves (sulphide) compare thus: June 30, 1917, 904,122 tons, 66s. 7d. per ton (value, copper at £95 per ton); September 30, 1917, 859,026 tons, 66s. 7d. per ton; March 31, 1918, 774,900 tons, 66s. 7d. per ton. As 84,378 tons were crushed in the six months to March 31 last no addition was made to the reserves, but exploratory operations are in progress at different points. There is a large quantity of oxidised ore as well as of lower-grade sulphide ore. Owing, however, to the level of expenses these tonnages are not included in the reserves. The position in depth has yet to be fully ascertained. At the 9th level the estimated length of the ore shute is 255 ft., and in the 10th level it is about 200 ft. The width, however, has increased very considerably, for whereas in the 9th it averaged 52 ft., it is something like 65 ft. in the 10th.

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THE YEAR WITH THE CONSOLIDATED MAIN REEF.

Increased Costs Offset Improvement in Yield.

THE report of the directors of the Consolidated Main Reef for the year ended 30th June, 1918, states, *inter alia*:—Shareholders were notified by circular dated the 26th October, 1917, that an extraordinary general meeting of this company had been convened for the 28th December, 1917, for the purpose of considering a scheme for the absorption by this company of the property and assets of the Main Reef West, Ltd., for 323,238 fully paid shares of £1 each in the Consolidated Main Reef Mines and Estate, Ltd. The provisional agreements in this connection entered into between this company, the trustees for the debenture holders of the Main Reef West, Ltd., and the Main Reef West, Ltd., were duly ratified at adjourned extraordinary general meetings of shareholders of both companies held on the 4th January, 1918, and duly confirmed by shareholders of the Main Reef West, Ltd., at an extraordinary general meeting held on the 19th January, 1918. To provide the purchase consideration for the property and assets of the Main Reef West, Ltd., the capital of this company was increased from the sum of £950,000 (of which £924,364 were then issued) to £1,247,602, by the creation of 297,602 shares of £1 each. Of these new shares 225,000 were allotted to the trustees for the debenture holders and 98,238 shares allotted to the liquidators of the Main Reef West, Ltd. The company having acquired 549,6136 claims and 1 mining stand from the Main Reef West, Ltd., the property holdings now comprise a mining area of 1,976-0819 mining claims, of which approximately 460 claims are north of the outcrop; 1 mining stand; the freehold of a portion of the farm Paardekraal No. 42, in extent 2,009 morgen, 305 roods; 6 water-rights situate thereon, and the township of Maraisburg. At the close of the financial year the transfer to this company of the property acquired from the Main Reef West, Ltd., had not been completed owing to the late arrival of the power of attorney granted by the trustees for the debenture holders in London to their local agent, authorising the cancellation of the mortgage bond over the property of the Main Reef West Co. Since then, however, the transfer of the property and assets has been effected and the debenture and share holders of the Main Reef West, Ltd. (in liquidation) have been duly advised of the fact through the medium of the press and by circular and have been invited to surrender their debenture bonds and share certificates for conversion into new shares of this company. The working profit amounted to £151,879 8s. 10d., which is considerably less than was anticipated. Although the yield showed a satisfactory improvement, this was more than offset by the increase in working costs, due principally to the further advance in price of imported materials. During the last three months of the financial year development operations in the No. 3 section have been very seriously hampered owing to an accident which occurred in March to the main hauling engine. The working profit for the year amounted to £151,879 8s. 10d., to which has been added £734 4s. 9d. the difference between certain items of revenue and expenditure detailed in the working expenditure and revenue account, making a total of £152,613 13s. 7d. This amount, together with the balance of £99,736 6s. 11d. unappropriated at the commencement of the year, capital account £38,874 2s. 8d., and forfeited dividends £321 15s. 1d., making a total of £291,548 18s. 3d., has been dealt with in the appropriation account as follows:—Government taxes, £22,217 8s. 8d.; dividends Nos. 19 and 20, £101,084 4s. 6d.; bearer warrants written off, £482 5s. 6d.; expenses in connection with the liquidation of the Main Reef West, Ltd., £1,000; balance unappropriated, represented by cash

and cash assets, less liabilities, £166,764 19s. 7d. This balance is made up as follows:—Shares and interests in co-operative concerns, £8,574 18s. 4d.; stores and materials, etc., £98,678 1s. 5d.; sundry debtors and payments in advance, etc., £11,206 6s. 7d.; net cash and investments, after allowing for liabilities, £48,305 13s. 3d. It will be observed from the financial statements that the assets of the Main Reef West, Ltd. (in liquidation) as at 31st October, 1917, have been incorporated in the accounts of this company. A large amount of the company's funds still remains invested in stores and materials. Owing to the war and the continued difficulty in obtaining mining supplies, shareholders will realise the necessity of carrying a large stock thereof in order that mining operations may not be interfered with. For the six months ended 31st December, 1917, dividend No. 19 was declared on the 28th January, 1918, at the rate of 5 per cent. on 924,364 shares numbered from 1 to 924,364 both inclusive, and at the rate of 2½ per cent. on 323,238 shares numbered from 924,365 to 1,247,602 both inclusive. These latter shares were allotted in connection with the absorption of the Main Reef West, Ltd., and carry in terms of the agreement with that company the right only to one-half of any dividend declared by this company for the six months ended 31st December, 1917. A further dividend No. 20 of 3¾ per cent. was declared payable to all shareholders for the six months ended 30th June, 1918. These two dividends absorbed £101,084 4s. 6d.

CONSULTING ENGINEER'S REPORT.

The consulting engineer writes:—The working profit amounted to £151,879, which includes twelve months' work of the Consolidated Main Reef section and nine months' work of the Main Reef West section. This profit is considerably less than was anticipated and less than the aggregate profit of the two companies for the corresponding period of last year. The yield showed a satisfactory improvement of about 1s. 8d. per ton, as also did the total value of the gold produced, but the great increase in costs, primarily resulting from the prices of imported materials, more than offset this improvement. The additional expenditure on stores consumed during June, 1918, as compared with June, 1914, amounted to no less than £7,850, equivalent to about £94,000 per annum, and prices continue to rise. In addition to this all other items of cost have increased. Arrangements have been made to operate the mine by means of two main shafts only, and No. 4 shaft of the Main Reef West section and No. 2 shaft of the Consolidated Main Reef section will be laid off as soon as the ore in their vicinity is worked out. In addition, further minor alterations on the surface to secure more economical working are also in progress. The capital outlay necessary to achieve this object will be comparatively small. In consequence of the increasing depth of the workings, additional pumping and hoisting equipment will shortly be required. In March last a serious accident happened to the main hoist at No. 3 shaft, which, as a result, was not operated during the last three months of the year under review, and development operations in this important section were therefore curtailed. The payable ore reserves as at 30th June, 1918, are as follows:—Main Reef Leader, 1,399,210 tons, value 7.3 dwts., stoping width 53 inches; South Reef, 26,660 tons, value 6.1 dwts., stoping width 50 inches; total, 1,425,870 tons, value 7.3 dwts., stoping width 53 inches. The ore reserve position shows but little change and, on the whole, is fairly satisfactory. It is, however, important to the future of this mine to carry on development and shaft sinking with the utmost speed. In view of the uncertainty regarding working costs, it is not possible to forecast the profits, but there is no reason to think that there will be any difficulty in maintaining last year's rate of yield.

SWAZI TIN ANNUAL REPORTS.

A Prosperous and Profitable Year—Consulting Engineer's Review.

THE Swazi Tin directors' report for the year to June 30 states:—The working profit for the year amounted to £45,483 16s. 8d. Township revenue, sundry revenue and interest yielded £336 5s. 9d., so that after providing for special prospecting, royalty and taxes a net balance of £40,303 6s. 4d. remained to be transferred to appropriation account. To this must be added the balance of £16,267 13s. 11d. brought forward from last financial year, making a total of £56,571 0s. 3d., which has been dealt with as follows:—Dividends Nos. 20, 21 and 22 of 5 per cent., 5 per cent. and 25 per cent. respectively, £28,700; expenditure on property and equipment, £95 14s. 2d.; balance carried forward, represented by cash and cash assets, less liabilities, £27,775 6s. 1d. The working expenditure and revenue account for the year was as follows:—Revenue: 425.15 tons of tin concentrate, £84,559 17s. 4d. Expenditure: Mine, £32,088 10s. 3d.; head office, £3,348 12s.; export charges, £3,638 18s. 5d.; total, £39,076 0s. 8d.; working profit, £45,483 16s. 8d. The June shipment, which had not been realised at the close of the financial year, has been taken into the accounts at a conservative figure. In addition to the payment of base metal royalty to the Swaziland Administration, provision has been made in the accounts for excess profits' tax payable under the Swaziland Base Metals Excess Profits' Tax Proclamation, 1918. This new tax amounts to 5s. in the £ on excess profits over the average of nine years prior to the 30th June, 1914, subject to an adjustment in respect of variations in the amount of capital employed in the mining operations. Capital expenditure during the year amounted to £715 10s. 6d., as follows: Smelting furnace, £634 7s. 9d.; tree planting, £81 2s. 9d.; against which were the following credits, viz.: Amount written off Mbuluzi water race, £570 19s.; electric cables, £35 2s. 6d.; receipts for township stands, £13 14s. 10d.; making a net increase for the year of £95 14s. 2d.

CONSULTING ENGINEER'S REPORT.

The report of the consulting engineer, Mr. J. Jervis Garrard, for the year ended 30th June, 1918, states:—The working profit for the year was £45,483 16s. 8d., as against £20,348 18s. 3d. for the previous year. A comparison of the year's results with those of the two previous years is as follows:—Cubic yards treated during year, 1917-18 1,125,441, 1916-17 915,536, 1915-16 915,282; cubic yards treated, average per month, 1917-18 93,787, 1916-17 76,295, 1915-16 76,273; lbs. concentrate recovered per cubic yard, 1917-18 .846, 1916-17 1.008, 1915-16 1.048; grade of concentrate per cent. metallic tin, 1917-18 70.83, 1916-17 70.73, 1915-16 70.5; lbs. metallic tin per cubic yard, 1917-18 .600, 1916-17 .713, 1915-16 .739; average value realized per cubic yard, 1917-18 17.256d., 1916-17 12.747d., 1915-16 11.519d.; average cost per cubic yard, 1917-18 7.557d., 1916-17 7.413d., 1915-16 6.726d.; average profit per cubic yard, 1917-18 9.699d., 1916-17 5.331d., 1915-16 4.793d.; average metal price realized per ton, 1917-18 £301.461, 1916-17 £193.785, 1915-16 £166.310. (The costs given

include all general charges and head office expenses.) The amount of ground treated during the year was 209,905 cubic yards more than during the previous year and although the recovery was less and the costs higher, the profit shows an increase of £25,134 18s. 5d. over the previous year, owing to the higher price realized for the metal. It should be noted, however, that the present cost of realizing a ton of metal contained in concentrate produced at the mine is considerably more than it was a year ago owing to increased transportation and smelting charges, due to war conditions. Power station: The main hydro-electric plant ran well during the year, the running time being 96 per cent. of full time, generating 889,215 units at a cost of 0.168d. per unit. The Foy's hydro-electric plant ran well during the year, the running time being 53 per cent. of full time, generating 285,505 units at a cost of 0.428d. per unit. Gravel pumping: The three 8-inch centrifugal gravel pumps ran 77.6 per cent. of the time that power was available, elevating on the average 26.02 cubic yards per hour to an average height of 37.2 feet. The total quantity of ground removed by these pumps amounted to 500,261 cubic yards. The average efficiency of the three pumps on the whole year's run was 22.4 per cent. (on the same basis as previous years) as compared with 22.84 per cent. last year. Nozzle pumping: A pressure nozzle pump was used in connection with one gravel pumping plant for 2,614 hours, accounting for 50,179 cubic yards. Another pressure nozzle pump ran the whole year at Foy's Creek for 96 per cent. of the time that power was available, cutting an average of 18.64 cubic yards per hour and accounting for 83,914 cubic yards. Hydraulic elevating: An 8-inch elevator was in use at Stable Creek, and a 10-inch elevator was in use at Manzane Creek during the year, running 60.93 per cent. and 86.21 per cent. of full time respectively. The average efficiency of the elevators was 11.04 per cent., as against 19.65 per cent. for the previous year and 12.97 per cent. for the year before. These elevators accounted for 167,642 cubic yards. The gravel pumps did 102 per cent. more work than the hydraulic elevators for a given quantity of water power. Another 8-inch elevator was run intermittently at Duncombe Creek during the year, and accounted for 51,798 cubic yards. Hydraulic: Two creeks were worked by monitors during a portion of the year. This work accounted for 74,357 cubic yards. Ground sluicing and handwork: 228,786 cubic yards of ground were removed by ground sluicing and sluicing in small boxes from 12 different workings where no water under pressure was available. Gravel syphon: The remaining 15,683 cubic yards of stony ground were removed by means of this device, completing the ground available for

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removal in this way. It will thus be seen that the total yardage was accounted for as under:—Hydraulicking and gravel pumping, 350,027 cubic yards, 31.1 per cent. of total at 7.268d. per cubic yard; nozzle pumping and gravel pumping, 150,234 cubic yards, 13.3 per cent. of total at 8.457d. per cubic yard; hydraulicking and hydraulic elevator, 222,440 cubic yards, 19.8 per cent. of total at 7.057d. per cubic yard; hydraulicking and gravel syphoning, 15,683 cubic yards, 1.4 per cent. of total at 9.035d. per cubic yard; total ground cut and elevated, 738,384 cubic yards, 65.6 per cent. of total at 7.620d. per cubic yard; hydraulicking, 74,357 cubic yards, 6.6 per cent. of total at 6.105d. per cubic yard; ground sluicing and handwork, 228,786 cubic yards, 20.3 per cent. of total at 6.742d. per cubic yard; nozzle pumping (Foy's), 83,914 cubic yards, 7.5 per cent. of total at 10.512d. per cubic yard; total ground cut but not elevated, 387,057 cubic yards, 34.4 per cent. of total at 7.437d. per cubic yard; grand total, 1,125,441 cubic yards, 100.0 per cent. of total at 7.557d. per cubic yard. The above costs include all general charges and head office expenses. A complete re-estimation of reserves has recently been made, based upon the results obtained from boreholes and pits. This shows that at the 30th June, 1918, the ground in reserve actually proved amounted to 3,530,000 cubic yards, of an average value of 0.68 lbs. M.T. per cubic yard, whilst there remain, of course, some millions of cubic yards of possible tin bearing ground still to be tested. The lower average grade of reserves is due to the fact that, owing to the increase in the price of metal and to the lower working cost rendered possible when working virgin ground, the pay limit is much lower than it used to be, thus making it possible to include more lower grade ground than formerly. The work of prospecting new ground is continually being carried on. The ground cut during the year included a large amount outside of the pay blocks originally estimated, it being considered advisable to remove all ground above the

pay limit encountered in the ordinary course of work, as, while it pays to take such ground in this way, it would not pay to come back later specially for it, and, owing to the increased price of metal, the pay limit is considerably lower than it used to be. This accounted for the value of the ground worked being only 600 lbs. M.T. per cubic yard during the year as compared with 713 lbs. M.T. per cubic yard during the previous year. A scheme is now under consideration for the installation of a further power line and nozzle pump for working the recent proved rich ground at Alice Creek, where as the result of a great number of prospecting pits put down during the year a large amount of rich tin-bearing ground has already been proved, while there is a great deal of ground at this creek still to be tested. A water-jacketted blast furnace has been installed, and preliminary tests are being carried out with a view to fixing the conditions for obtaining the best results in smelting concentrate.

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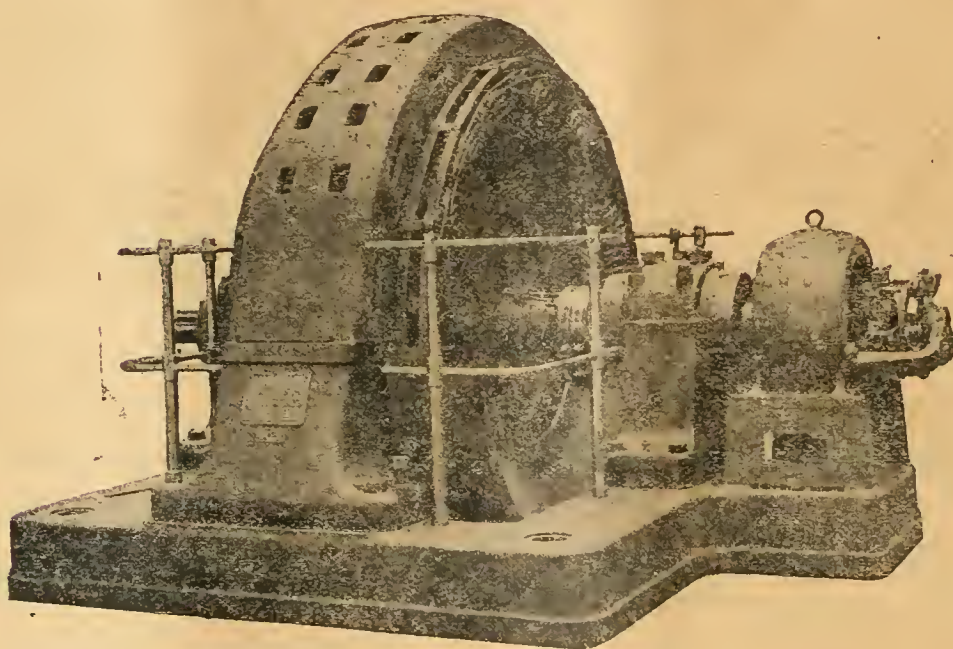
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ACCIDENTS ON WITWATERSRAND GOLD MINES.*—III.

Annual Review and Analysis by the Government Mining Engineer.

ACCIDENTS AT COLLIERIES.

The colliery accident death-rate for the Transvaal Province in 1917 is 2.04 compared with 2.49 for 1916. Witbank Colliery, the largest producer, had no deaths from accidents during the year as against a death-rate of 1.24 for 1916. Collieries in the Orange Free State show a death-rate of 5.25 for 1917, which is very unsatisfactory, and which is largely due to the conditions prevailing at the Cornelia Colliery, a large producer employing an average of 1,672 men. This mine had thirty casualties during the year, including nine deaths, and has the unenviable accident death-rate of 5.38 per 1,000, which, on the law of colliery averages, is extremely bad. Falls of coal, truck accidents, and small emissions of fire-damp carelessly handled, were the causes of this high accident death-rate, and the unsatisfactory conditions prevailing at the mine have necessitated extra inspections, the enforcement of special regulations, and the issue of mandatory letters to the owners and manager. The Natal collieries, which include all the fiery mines in the Union, have an accident death-rate of 1.73 for 1917, which for this class of mining can be regarded as very satisfactory. Nine collieries, including Elandsplaagte, St. George's Hattingh Spruit, and Natal Steam Coal Co., had no fatal accidents, and the Glencoe Colliery is the only mine with a bad death-rate. In 1916 no deaths from accident occurred at the last-named mine, and it is difficult to account for the large number (7) in the past year. A considerable number of changes amongst miners took place on this property during 1917, and, as the mine is undoubtedly a dangerous one, probably these frequent changes contributed to the high death-rate. The officials of the St. George's Colliery have again to be congratulated on the remarkably low accident rate at their mine; employing over 750 persons, they have only had one fatal accident in the past five years, and this in a mine which works both seams of coal and which in 1917 was entirely on pillar extraction.

ACCIDENTS ON ALL MINES IN THE UNION IN CONNECTION WITH:

Fall of Ground in situ.—Accident due to fall of ground number 596, or 22.7 per cent. of all accidents. The casualties resulting therefrom were 753, or 25.7 per cent. of all casualties. There were 273 deaths, or 41.1 per cent. of the total number killed. Fault either on the part of the killed or injured or of other persons accounts for 10.4 per cent. of the accidents and 15 per cent. of the deaths under this heading, as against 13.1 per cent. and 29.3 per cent. respectively for the year 1916.

Explosives.—Accidents due to explosives rank fourth in point of the number of casualties, but second in importance in the number killed. There were 120 accidents, resulting in 212 casualties, a proportion of 4.6 per cent. and 7.2 per cent. respectively of all accidents and casualties. There were 104 deaths or 15.7 per cent. of the total number killed. Fault either on the part of the killed or injured or of other persons accounts for 51.7 per cent. of the accidents and 51.9 per cent. of the deaths under this heading, as against 55.7 per cent. and 61.3 per cent. respectively for the year 1916.

Fall of Material.—Accidents due to the fall of timber, tools, etc., loose stones rolling down workings or falling from skips or timbers number 508, resulting in 517 casualties and 53 deaths, or 7.98 per cent. of the total number killed as against 7.8 per cent. for the year 1916. Fault either on the part of the killed or injured or of other persons accounts for 3.74 per cent. of the accidents under this heading, as against 5.68 per cent. for the year 1916.

Trucks and Tramways.—Accidents classified under this heading number 602 or 22.9 per cent. of all accidents. There were 606 casualties and 56 deaths. The ratio of casualties to deaths, viz., 10.8:1, indicates that accidents under this heading seldom prove fatal, as a comparison with accidents due to fall of ground and explosives show the ratio of casualties to deaths as 2.8:1, and 2.0:1 respectively.

Machinery.—There were 137 accidents resulting in a similar number of casualties and 24 deaths. Fault either on the part of the killed or injured or of other persons accounts for 38 per cent. of the accidents under this heading, as against 45.2 per cent. for the year 1916.

Boilers and Steam Pipes.—Under this heading there were seven accidents recorded as compared with five during 1916 and ten during 1915. There were three cases of burst tubes in water-tube boilers of the straight tube class, and in each case deterioration and scour of the material was adjudged to be the cause. Three natives were killed as the result of these accidents. One native died through burns caused by stepping into a boiler flue containing hot soot. The evidence taken at the inquiry went to show that deceased had mistaken the orders given to him by the white overseer. One white person and one native were injured through the bursting of water gauge glasses. One native died from injuries received through the bursting of a steam stop valve due to water hammer.

The list of certificates issued by the Mines Department for the month of August, 1918, is as follows:—Assayers' Certificates: D. J. Donaldson, G. St. Claire, A. L. Wright, A. Forson Stewart, A. Whitby. Mine Overseers' Certificates (Metalliferous): T. Backhouse, R. E. Cross, K. P. Fitch, D. Higgins, D. J. Venter, F. J. Brink, M. J. Fennelly, D. Harley, G. Loggie, F. C. Willoughby; (Diamonds) G. Billing, J. Collinson, T. Devlin, T. Gordon, W. Lewthwaite, H. H. Tregoning, G. C. Carr, W. Coughlan, G. Dickson, W. Hodgson, G. R. Moore. Mine Surveyors' Certificates: F. V. Freilanghaus, S. N. Hoffenberg, D. Watson, B. M. Harris, S. E. Willows-Munro, G. L. de l'H. Ranking.

Transvaal G.M. Estates.

A dividend of 2½ per cent. (6d. per share) free of South African tax has been declared by the board for the period ending 30th September, 1918, payable to all shareholders registered in the books of the company at the close of business on the 30th September, 1918, and to holders of Coupon No. 25 attached to share warrants. The transfer books will be closed from the 1st to 8th October, 1918, both days inclusive. If possible the dividend will be paid early in November, 1918, but owing to the irregularity in the mail service it is impossible to state the actual date of payment. The warrants, however, will be dispatched to shareholders as soon as possible after receipt of the final transfer returns from the London office. Those dispatched from the London office to persons resident in the United Kingdom will be subject to a deduction of English income tax. Coupon No. 25 attached to share warrants will be payable at the London office of the company. Coupons must be deposited four clear days before being paid, and unless accompanied by inland revenue declarations, they will be subject to a deduction of English income tax.

Monteleo Diamonds.

The secretary of the Monteleo Diamonds, Ltd., reports the following results of operations at the mine for the quarter ended 31st August:—Reef hauled, 6,246 loads; blue washed, 10,894 loads; value of diamonds recovered, £4,512, equal to £41 8s. 4d. per 100 loads. To enable the next level to be opened and reef haulage to be extensively handled the manager has advised to suspend washing operations direct from mine for one month. In the meantime ground which has so far only passed through one set of rolls will be re-treated. A new machine for the treatment of blue ground has been invented, and tests are at present being made with a view of installing a plant at the Monteleo Mine. This, which promises to be a success, will do away with the necessity of further rolls.

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THE MINING INDUSTRY OFFICIALLY REVIEWED.—III.

Some Extracts from Annual Reports of Inspectors of Mines.

BOKSBURG INSPECTORATE, TRANSVAAL (H. BOTTOMLEY).

Ventilation.—During the year the question of ventilation has been forced on the attention of managers by the promulgation of more drastic regulations dealing especially with drives and back stopes. In consequence, the provision of a cheap and effective method of bratticing had to be considered. Iron ventilation piping is almost unobtainable owing to the war, and canvas pipes last only three to four months underground, being attacked by a fungus and destroyed. To Mr. Stuart Martin, Consulting Engineer of the Modderfontein East, is due the credit of bringing forward the idea of making a solid brattice by building brick walls along the drives, thus providing an independent ventilating system for each heading. The cost will be about 10s. per running foot on flat mines and slightly more on inclines where the foundations have to be stepped to ensure a horizontal lay for the bricks. The opening up of our flat mines in this district in accordance with the approved method of very long main haulages now presents no difficulty. The condition of the workings will be so good, provided the fans are kept going, that three shifts will be permitted in the face. Following on Mr. Stuart Martin's idea, Mr. Womble, of the Witwatersrand Deep, in order to obtain a less costly bratticing has conducted successful experiments in reinforced concrete with the aid of chicken wire and the well-known "Cement Gum." Chicken wire is stretched along the drive on timber uprights and backed up with portable screens of ceiling boards. The concrete is then blown on to the wire under a pressure of about 30 lb. to the square inch. The brattice wall can be made of any thickness, but 1½ inches should be sufficient. The cost of this method is about 6s. per running foot, and has, I consider, a great future, especially in shafts, vertical or inclined, where brick bratticing is sometimes out of the question. At the Government Gold Mining Areas a new fan has been installed at No. 2 Shaft with a capacity of 250,000 cubic feet per minute, which draws the air from the other three shafts. This one fan now deals successfully with workings which are scattered over an approximate area of 2½ square miles. The management on this mine have paid special and continuous attention to the question of ventilation, and are to be commended on their efforts. The mine is well ventilated and very well run.

Prevention of Dust.—This most important question has been tackled during the year energetically and systematically. The queries addressed to managers by their head offices as a consequence of high dust results, although of a worrying nature, have a most beneficial result in stimulating the efforts of all underground officials, and it is hoped that the system will continue in all its vigour. The collaring of holes and Leyner machines appear to be the principal sources of dust. It is a difficult matter as yet to induce native machine drillers to realize the importance of the new regulation which insists on collaring under an open water-pipe. On the other hand, there has been no instance recorded during the year of ground being lashed in stopes or drives without first being damped. Drilling dry is still being carried on to a modified extent, but punishment is having its effect. The official method of dust determination by the sugar test is unsatisfactory, as is shown by the fact that check samples taken simultaneously with properly calibrated pumps show varying results. Apart from this, it is now an accepted fact, the repetition of which amounts almost to a platitude, that this method does not give results which make any discrimination between the heavy or innocuous particles and the fine microscopic particles which are the direct cause of silicosis. The komimeter recently introduced has now been demonstrated and tried on every mine in the district, and there appears to be absolute unanimity amongst mine officials in the opinion that this instrument from every point of view fulfils all requirements. The difficulty in obtaining microscopes is doubtless a factor against its extended use, but it is difficult to understand why its adoption has not been officially recommended in those instances where circumstances permit.

Sand Dumps.—During the year managers have again been warned regarding the danger of neglecting to spray dumps. The Brakpan dump, which was quite the worst in the district is being covered with 4 inches of red soil. The other dumps which have been selected under the new regulation as requiring attention are being sprayed. The question arises as to what steps should be taken in regard to dumps on the shutting down of mines in order to ensure some sort of permanency in dust prevention. The usefulness of a sprayed dump does not survive a few rains unless it is very heavily sprayed.

Coal.—Prospecting for coal is being energetically carried on in the Ermelo area. It is probable that when normal conditions prevail this area will form an important contributor, especially in export coal as it bunkers well.

Metals.—There has been a fair amount of prospecting in the Piet Retief area during the year, but nothing of any commercial value has so far been opened up in the shape of gold, diamonds, or base metals. There are numerous examples of small gold-carrying quartz reef, but values are inconsistent and invariably disappear on sinking a few feet below the surface.

Circular Shaft Lining.—There are five circular shafts now being sunk in this district, four of which are being lined with special concrete bricks similar to those in use at the Crown Mines Shaft. At the East Rand Proprietary Mines, however, it was realized that this method had its disadvantages. The hard compact rock encountered on our mines renders the doubtful security afforded by the brick lining unnecessary, and the only remaining use for their provision is the footing afforded upon which to rest and secure the buntons and shaft equipment. Bricks are now discarded at this shaft and in their place reinforced concrete rings are provided in the shaft at intervals of 15 feet, which are securely hitched into the side, and which are provided with pockets for the reception of buntons. Should bad ground be encountered the interval between the rings can be built up with concrete and secured. It is claimed that by this method the rate of sinking is considerably accelerated as the time taken up in bricking, during which time sinking is stopped, is obviated, as the building of the rings or curbs is performed from the Galloway Stage without suspending sinking operations. Another advantage claimed is the facility afforded for shaft examination. It is probable that the other circular shafts will follow the example of the East Rand Proprietary Mines, who, I understand, are the world's pioneers in this matter.

Cementation.—The Francois method of stopping the flow of water in underground fissures by the injections under superior pressure of liquid cement, has been tried on the lower levels of the East Rand Proprietary Mines during the year. While the process has not fully realized the promises of the inventor, it has undoubtedly been proved that it is possible under ordinary conditions to completely seal up water-bearing fissures. The only failure so far has been at the bottom of an inclined shaft, which was being sunk on or about the reef plane. Here numerous holes were drilled into the sides and injected, but it was found that the concrete had not travelled any distance along the fissures. It is suggested in this case that the water was not contained in any one or two definite fissures but in a considerable area of water-logged footwall shales, which have become partly decomposed, and which have the nature of a clay sponge. Cementation is now being tried at Geduld with success, and at Daggafontein. At the latter mine the process is being tried at No. 2 Shaft which is now being sunk through the dolomites. As the reef on the Far East Rand is overlain by the water-bearing dolomites the Pagefontein experiment is being watched with great interest, as, if it should prove successful, it will probably lead to the opening up of such mines as "Grootvlei," "Western Rand Estates," and "Welgedacht Gold Section," which were shut down owing to dolomite water.

Waterfed Reciprocating Drills.—The waterfed reciprocating drills operating on the Swift patents were tried on the Van Ryn Deep during the year. The patent was fitted to a Holman machine with locally cast head attachments to accommodate the water-fed. Up to the time of writing not much progress has been made, as the castings were too frail and had broken under the strain. It is doubtful whether the extra weight of the blow afforded by the heavy reciprocating machines even with a water-feed, will equal the effect of the lighter but very much more rapid striking of the present hammer-type waterfed drills. The amount of dust produced when using the Swift attachment is negligible and this is its chief recommendation.

(To be continued.)

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THE WEEK IN THE SHAREMARKET.

Activity in West Springs—Rise of New Modderfontein.

ON Friday afternoon a move began in West Springs and their Options. It was continued on Saturday morning, together with one in South Van Ryns. The first-named stock has been strongly tipped. At the call the whole market was firm and prices hardened. New Modders made a further advance and the price of £25 12s. 6d. has never before been reached. Modder East and their Options were also better. There seems to be inclination to sell the four-years and buy the three-years, owing not only to the difference in price of the two stocks, but also from the fact that there is a further difference in favour of the lower-priced shares in the figure at which the option can be exercised. A reaction set in on Monday morning. The opening was mainly devoted to West Springs with numerous sales between 26s. 3d. and 26s. 6d. At the call the whole list, with one or two exceptions, was marked down. There was one large buying order for Kleinfonteins which was not completed at 14s. 9d. During the day African Farms rose to 16s. Tuesday brought little change in prices and not much inclination to deal. Van Ryn Deep, Sub Nigels and Springs were the turn to the good; the Modder stocks unchanged; Government Areas and Geduld Props easier, and Africans 3d. to the good. The market was again dull on Wednesday with a lower tendency, except in Modder Bs. and New Modders. On Thursday morning Springs opened firm with sales at 72s. 9d. and 73s. The volume of business was greater at the call than of late. Government Areas recovered some of their lost ground. All the Modder stocks were good. New Modders at £27 2s. 6d. established another record. Modder B., however, dropped 1s. 3d. on the opening price. Business in outside stocks was limited during the past week. Sales: Monteleos, 21s. to 26s.; Union Tins, 5s. 2d.; Sakalavas, 10s. 6d.; Mauss Syndicate, 30s.; Makganyene Diamonds, 35s.; Uitkyk, 5s. 3d. Buyers and sellers: Union Mica, 9s.—10s.; Phoenix, 10d.—11d.; Sullivan Music, 20s., seller; Henderson's Estates, 4s. 3d.

The market was dull on Friday morning. The following alterations in prices are noted:—Sales: Geduld Props, 37s. 3d.; Government Areas, 91s. 3d. and 91s.; Hume Pipes, 34s. 6d.; Main Reef Wests, 2s. 10d.; Modder Deeps, £7 8s. 6d.; Modder Easts, 21s. 7½d.; Nourse Mines, 18s.; Southern Van Ryns, 14s. 6d.; S.A. Alkalis, 40s.; Wit. Deep, 8s. 10d.; Zaaiploats, 17s. Buyers and sellers: African Farms, 15s. 3d.—15s. 9d.; Mines Selections, 26s., 26s. 9d.

	Fri., 20th.	Sat., 21st.	Mon., 23rd.	Tues., 24th.	Wed., 25th.	Thurs., 26th.
African Farms . . .	14 9	14 6*	14 6*	16 3	15 10*	15 9
Anglo-Amer. Corp. . .	31 6*	—	31 6*	31 9*	—	31 6*
Apex Mines . . .	7 1*	7 3*	7 3*	7 4*	7 7*	7 9*
Aurora Wests . . .	9 0*	9 0*	9 0*	9 0*	9 0*	9 0*
Bantjes Cons. . .	3 1*	3 1	3 1*	3 3*	3 3*	3 5
Brakpan Mines . . .	77 0	75 6*	75 0*	75 0*	75 0*	75 6
Breyten Collieries . .	10 0*	—	10 0*	10 0*	10 0*	10 0*
Brick & Potteries . .	—	—	3 9*	—	3 9*	3 9*
British S. Africa . .	16 6†	—	—	—	—	—
Bushveld Tins . . .	0 11†	1 0†	0 11†	—	0 10	0 6*
Cassell Coals . . .	29 0†	29 0†	29 0†	—	29 0†	29 0†
Cinderella Cons. . .	—	5 0†	4 0*	—	4 0*	—
City & Suburbans . .	—	9 0*	9 0	9 0*	9 6†	8 9*
City Deeps . . .	51 6*	52 0*	53 0†	52 0†	52 6*	53 0†
Cloverfield Mines . .	9 4*	9 6	9 3*	9 6†	9 0*	—
Clydesdale Cols. . .	18 0*	18 0*	18 0*	18 0*	18 0*	18 0*
Concrete Construc. .	6 0†	—	6 0†	5 3*	5 3*	5 6*
Con. Investments . .	19 6	19 0*	19 0*	19 0*	19 0*	19 0*
Con. Langlaagtes . .	18 0*	18 0*	18 0*	18 6	19 0*	19 0*
Con. Main Reefs . .	12 3	12 0*	12 3	12 0*	12 3	12 3
Con. Mines Selec. . .	25 9*	25 9*	25 6*	25 6*	25 0*	25 6*
Coronation Cols. . .	40 0*	42 6*	—	40 0*	44 0*	43 0*
Coronation Freeholds	1 1*	1 2*	1 2*	1 2*	1 2*	1 3*
Coronation Synd. . .	—	—	2 0†	2 0†	—	2 0†

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 20th.	Sat., 21st.	Mon., 23rd.	Tues., 24th.	Wed., 25th.	Thurs., 26th.
Crown Diamonds . .	5 0	5 6†	5 3†	5 0†	5 0†	5 0†
Crown Mines . . .	40 6*	40 6*	40 0*	—	40 3*	40 3*
Crown Mines Deb. .	£100*	£100*	£100*	£100*	£100*	£100
Daggafontein Mines	23 9*	23 9	23 9*	23 9*	23 9	23 9
Do. Options . . .	5 0	5 0*	5 3	5 0*	—	4 3
Durban Road. . .	10 0*	10 0*	10 0*	10 0*	10 0*	10 0*
Durban Road. Deeps	7 0*	7 0*	7 0*	7 0*	7 0*	7 0*
East Rand Coals . .	2 2*	2 3*	2 2*	2 2*	2 3	2 2*
East Rand Deeps . .	0 11*	0 11†	0 11*	—	0 11*	0 11*
E.R. Minings . . .	18 0†	18 0†	18 0†	18 0†	—	—
East Rand Props. . .	4 6*	4 6*	4 6*	4 6*	4 6*	4 6*
East Rand Deb. . .	£60½*	£61½*	£63*	£63*	—	£63*
Eastern Golds . . .	1 3*	1 3*	1 4	1 3*	1 3*	1 3*
Ferreira Deeps . . .	—	—	—	8 0*	—	9 0*
F. Smith Diamonds	3 4*	3 4*	3 4*	3 5	3 5	3 4*
Geduld Props. . .	37 9*	37 9*	38 3	37 9*	37 6*	37 6
Geldenhuis Deep . .	37 9*	—	—	—	—	—
Glencorm . . .	2 0†	2 0†	2 0†	1 6*	2 0†	2 0†
Glencoe Collieries . .	6 0*	6 0*	6 0*	6 0*	—	6 0*
Glynn's Lydenburgs	23 3*	23 0*	24 0*	24 6*	24 6*	24 3A
Government Areas .	92 3	92 0	91 9	91 0	90 3	91 3
Jhb. Bd. of Executors	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters . . .	4 0*	4 0*	4 1*	4 4*	4 0*	4 0*
Klerksdorp Props. .	—	2 9*	2 9*	3 0	3 0A	3 0*
Knight Centrals . .	4 2*	4 4†	4 3*	4 4*	4 6†	4 3
Knights Deeps . . .	—	6 0*	—	6 0*	7 0†	7 0†
Lace Props. . .	12 11	13 4	13 0	13 0*	13 3	13 0
Leeuwpoot Tins . .	37 0	36 6*	36 3*	36 9*	36 9*	36 3
Luinaardsvlei Est. .	—	—	—	—	1 3*	1 3*
Lydenburg Farms . .	9 4	9 5	9 4*	9 3*	9 3*	9 3*
Main Reef Wests . .	2 10*	2 10*	2 10*	2 10	2 10*	3 0†
Meyer & Charltons .	86 3*	86 0*	86 0*	—	—	—
Modder B's . . .	163 6*	165 0	164 0*	165 0*	166 0*	167 6
Modder Deep . . .	147 0*	147 0*	147 0*	147 0*	137 0*	148 0
Modder Easts . . .	21 9*	22 2	22 0	21 10½	21 6*	22 0
Do. Options (3 yrs.)	6 9*	6 10	6 8†	6 8	6 8	6 8
Do. Options (4 yrs.)	8 0	8 1	7 11	7 10*	7 10*	7 10*
Hume Pipes . . .	33 6	33 0*	33 0*	33 0*	33 0*	34 0
Langlaagte Est. . .	20 0†	20 0†	20 0†	20 0†	—	—
Natal Navig. Col. .	19 0*	19 0*	19 0*	19 0*	19 0*	19 0*
New Boksburg . . .	1 6†	—	—	—	—	1 0*
New Eland Diam. . .	23 6*	23 6*	24 0*	24 0*	24 0*	25 0
New Era Cons. . .	10 3	10 4	12 6*	10 1*	10 0*	10 3*
New Geduld Deeps . .	5 9*	5 10*	5 9*	5 9*	5 9*	5 10*
New Harjots . . .	13 0*	13 0*	12 0*	13 0*	13 0*	13 0*
New Kleinfonteins .	14 9	15 3	15 3	14 9	14 6*	14 9
New Modder . . .	£26½*	£26½*	£26½*	£26½*	£26½*	£27½
New Unifeds . . .	5 6*	5 6*	4 6	5 6*	7 0†	5 6*
Nigels . . .	4 6*	4 6*	—	4 6*	4 0*	4 0*
Nourse Mines . . .	17 6*	—	—	17 6*	17 6*	17 6*
Premier Preferreds .	145 0*	145 0*	—	—	—	—
Pretoria Comments .	72 6*	72 0*	72 0*	72 0*	72 0	—
Princess Estates . .	3 9†	3 7	3 6*	3 8	3 7*	3 7*
Rand Collieries . . .	3 9†	3 9†	3 9†	3 9†	3 9†	3 9†
Rand Klins . . .	—	11 3†	11 0†	10 0*	10 6*	10 6*
Rand Nucleus . . .	1 3*	1 3	1 3*	1 3*	1 3*	1 3*
Rand Select. Corp. .	86 0*	87 6*	87 0*	87 0*	87 0*	87 0*
Randfontein Deeps .	4 3	4 4*	4 3*	4 4*	4 3	4 3*
Randfontein Est. . .	14 6*	—	14 6*	14 6*	14 0*	14 3*
Roberts Victors . .	—	6 0*	6 0*	6 0*	—	6 0*
Rooibergs . . .	10 6*	10 9*	10 9*	10 9*	10 9*	10 9*
Roodenort Uniteds .	3 3*	—	—	2 9*	2 9*	2 9*
Ryan Nigels . . .	2 6*	2 6*	2 9*	2 9*	2 9*	2 9*
Shahas . . .	—	—	1 0†	1 0†	—	1 0†
Simmer and Jacks . .	—	—	—	5 6	—	—
Simmer Deeps . . .	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
S.A. Breweries . . .	28 6*	—	30 0*	30 0*	—	30 0*
S.A. Lands . . .	6 9*	6 9*	6 9	6 9*	6 9	6 8*
Springs Mines . . .	70 9*	71 3	70 9	71 0	71 0	72 9
Sub Nigels . . .	27 3*	28 0	27 9	27 9	27 9	27 9
Sveazland Tins . . .	30 0*	34 0†	33 9†	34 2†	33 6†	33 6†
Transvaal Lands . .	—	20 0*	21 0*	21 0*	—	20 0*
Trans G.M. Est. . .	—	17 0†	16 6†	15 0*	—	16 9†
Van Ryn Deeps . . .	71 0*	71 9	71 3	71 6	71 3*	71 0*
Village Deeps . . .	—	—	14 6*	15 0*	—	14 6*
Western Rand Est. .	—	—	—	—	—	2 0*
Withank Collieries .	50 0*	50 0*	50 0*	50 0*	50 0*	—
Witwatersrands . .	21 0†	21 0†	21 0†	—	20 6†	—
Wit Deeps . . .	8 0	8 0*	8 0*	8 6*	8 0*	8 6*
Witwaters . . .	3 0*	3 9*	3 9*	3 9†	4 0†	3 9
Zaaiplaats Tins . .	17 7*	17 7	17 4	17 4†	17 1	17 0*
Union 5 per cent. .	£104½*	£104 13 9*	£104 13 3*	£104½*	£104½*	£104
New Statog . . .	20 0*	20 9*	20 6*	20 8	20 6	20 6
S. Van Ryn . . .	14 9*	16 3	15 7½	15 6	15 0*	15 0*
Do. Options . . .	1 5*	1 8†	—	—	—	—
S.A. Alkali . . .	40 0	41 3†	40 0A	41 3A	—	—
Union 4 per cent. .	£83*	£83*	£83*	£83*	£83*	£83*
National Bank . . .	£14½*	£14*	£14*	£14*	£14½†	£14 3 9*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

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Mine Boys, beg to inform the Mine and Compound Managers that despite the present high cost of flour, the price for this wholesome and very nourishing food has been practically kept at the pre-war level, thus making Macaroni the most economical food of the present times. Owing to the general increase of the prices of all foodstuffs Soup Macaroni has now been introduced into the native diet by a large number of Mining Companies, in whose Compounds the full content of the Boys has been gained by occasionally changing with Macaroni their somewhat monotonous menu.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

**Market Uncertain—American and British Arrivals—Steel Plates Not Active at Price—
Glue Cheaper—South African Turpentine—Glycerine Scarce—Plate and Window Glass
Arrivals—Shovels and Wheelbarrows—Timber About Top.**

BUSINESS is in an uncertain state, chiefly because of the arrivals from America of belated orders. A leading firm has more goods arriving and coming forward, as per advices, than for two years past. This also applies to other firms, more or less, and although mining and all other materials are dearer, yet selling is sluggish and the strong holders will not push business at current rates but must hold on to recoup themselves until they can gauge the position better. For example, fifteen guineas per cent. was paid for insurance on the sailing vessels just arrived and other charges are on the heavy side. Notwithstanding this, loose wire nails are already a little cheaper, in some sizes. There are also some steel plates in the market at about 80s., but there are no enquiries for them, because the second-hand kind has been such excellent substitutes, and 80s. is very high. There is also a bad set-back in glue, something like a shilling per pound wholesale, and several speculators holding large stocks for a rise have been rather badly hit, since the arrivals from the Argentine came in so freely, and after all there is not an unlimited demand for glue, but the price of 2s. 4d. lb. wholesale for a while was very tempting for speculators to do an extra lot of importing. The fact is that a little while ago the war news was not too encouraging, therefore merchants took liberties in extending their oversea orders, but now daylight is breaking through and the war news is excellent, there has become a feeling that the sooner all oversea orders are fulfilled and landed in Johannesburg the better.

TURPENTINE AND ITS ABSENCE.

The acute shortage of turpentine is being sadly felt as the polishes and blacking factories in Johannesburg have had practically to suspend operations. It is so difficult, nay impossible, in most cases to find a substitute for turpentine. The great feature of turpentine is that it is such a clean spirit that it never leaves any sign of an oily character after

the polishing process. It is pleasing to record that a gentleman from the Government Land and Forests Department visited Johannesburg during the week and brought a sample of turpentine extracted from wood in the Orange Free State. It seemed to stand the various tests, and now the question arises as to whether it can be brought forward from the initial experimental stage to a commercial proposition. In the meantime it is very problematical from where our next supplies of turpentine will come.

OILS, COLOURS AND GLASS.

Glycerine is very scarce, being from 8s. to 9s. lb., as it has been on the British prohibitive list for a long time, and now America has followed suit. White lead is very plentiful, and although the standard price is 1s. 3d. lb. there was some on offer this week at 1s. 2d. lb. wholesale. The plate glass and window glass position has been eased by some consignments now coming to hand from England. Most of the plate glass, however, will be required to fill bespoke orders, but the sheet glass is not quite so hampered, therefore the new supplies will carry us on for a couple of months or so. Plate is now 8s. 6d. and mirror 9s. per ft. The demand for paints, oils and colours is great, but it is getting harder from week to week to supply the everyday requirements owing to badly assorted stocks.

IRON, STEEL, SHOVELS AND SUNDRIES.

Business is quieter, presumably because merchants are waiting to ascertain particulars of the material now arriving from America. Imported bar iron is very scarce indeed, but quotations have not altered, but the price is a secondary matter providing the correct thing is obtainable. Wire nails are a shade easier on account of the fresh arrivals from

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Canada. However, this only applies to big sizes. Dog spikes are practically unobtainable. Shovels and wheelbarrows are easier, also through receipt of them from overseas. By the way, small consignments of bar iron constantly come from Britain, as well as America. The shipping, through so many sailing vessels being engaged, is a trifle easier on the American route. In this connection it appears that an extra effort is being made in clearing some of the very old orders from New York for South Africa, as it is understood that some neutral steamers have also recently been engaged for this purpose.

TIMBER AND BUILDING MATERIAL.

Prices of timber have not altered, but there is an idea that the Swedish Exchange is making for an improvement in the value of the English sovereign in Christiania. And also the quotations for timber from there, as well as shipping conditions, are a trifle easier, therefore people who should be able to form an opinion consider that the Johannesburg prices for timber are now about top. The demand for ordinary stock bricks, particularly the best quality, is brisk, and these are not too plentiful, although with the continued fine weather the yards are overtaking orders. It is most difficult to obtain wire cut or pressed bricks. Business in the country for timber and builders' hardware is the best, followed on by Johannesburg and Reef in a secondary degree.

ELECTRICAL GOODS.

Tubing is exceptionally scarce and substitutes have to be used wherever possible. Some sizes of wiring are practically unobtainable, therefore dearer when it can be picked up. Business is quite good providing one has anything like an assorted stock. The Johannesburg Municipality has given notice of an increase of 10 per cent. on electrical lighting. Hence many enquiries as to lamps that can be turned down, but so far although there are several kinds in the market, they have not yet been generally adopted. Perhaps this is their chance for a trial.

HARNESS AND SADDLERY.

Business is fairly brisk with the country districts, and it is quite sound, as a leading firm had practically no bad debts from the country storekeepers' trade during the year 1917. The difficulty with the country trade, however, is that prices will go up, and the farmers cannot understand why values go up almost every time they come into town. Nevertheless it is not altogether a question of values, but whether the harness making shops will not have to partially close down, consequent on the shortage of thread, flax and hemp, to say nothing of harness furniture. For although the brass founders can make buckles when ordered, yet their prices are very dear, as compared with the imported articles, which are made by the thousand. The hemp question is the most serious, as it is almost as important as leather in making a set of harness. This harness-hemp came from Belgium or Russia in ordinary times, but now that is out of the question, and what Britain has is wanted by the Government for military work.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 2s. to 2s. 1d.; flooring, 4½ x ¾ and 6 x ¾, 11d. to 11½d. per sq. ft.; ceilings, 6 x ½, 7d. to 7½d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. to 9s. 6d. per cub. ft.; clear pine, ½in. x 12in., 1s. 6d. per foot; 1in. x 12in. 2s.; teak, 25s. to 26s. per cubic foot; shelving, 1s. 3d.; Jarrah, 13s. 6d. c. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 2s. to 2s. 1d. ft.; beaver boards, 11d.; galvanised iron, 24 gauge, 6ft. to 10ft., 2s. 2d. to 2s. 3d.; 11ft., 2s. 3d.; 12ft., 2s. 3½d.; 26-gauge, 6ft. to 8ft., 1s. 10d.; 9ft. and 10ft., 1s. 11d.; flat galvanised, 24 and 26-gauge, 110s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed,



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With power to increase to	-	-	-	£4,000,000
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transactions of any of its customers.

70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. to 15s. O.M. gallon; white lead, 1s. 6d. per lb. and 1s. 3d. in big lots; turpentine, 110s. 2/4 1-5 galls.; 10-1's; 5-6 imp. tins, 120s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, 1/2in., 8s. 6d.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin quotations unobtainable; petrol, 39s. 2d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 47s. 6d. per case; cylinder, 37s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £40 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11b.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, 100s. to 110s. 100 lb.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/13, 190s.; tubing, 50s. to 55s. per 100ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, 1/2in. and 3-16in. round iron, 95s. to 100s.; 1/2in. do., 85s.; 1/2in. steel, round, 80s.; 1/2in. round iron, 75s.; do. steel, 72s. 6d.; 1/2in. round iron, 72s. 6d.; do. steel, practically none in town; 1/2in. round iron, 65s. to 67s. 6d.; 1/2in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at

45s. per 100 lbs. Verceniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, 1/2in. diameter, 2s. to 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; 1/2in. diameter up to 3in. long, 1s. 9d. lb.; 1/2in. dia., 1s. 6d., 3/4in. and up long 1s. 6d. lb.; 1/2in. dia. up to 2½in. long, 77s. 6d. 100lb.; 1/2in. dia. and 2½in. up long, 75s. per 100lb.; 1/2in. diameter up to 2½in. long, 85s. per 100lb.; 1/2in. dia. 2½in. and up long, 60s. per 100lb.; 1/2in. diameter, 2½in. and up long, 55s. 100 lb.; 1/2in. and 1in. diameter, same price as 1/2in. diameter; nuts, 1/2in., 1s. 3d. per lb.; 1/2in., 85s.; 1/2in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 45s.; rivets, 3-16in., 1s. 6d. lb.; 1/2in., 5-16in., 1s. 6d. lb.; 7-16in., 1/2in., 1s. 3d. lb.; 1/2in., 75s. to 80s.; 1/2in., 72s. 6d.; 1/2in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s., 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

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Subscribed Capital	-	-	£6,194,100
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Commencing 23rd September, 1918.

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Armstrong College, Newcastle-on-Tyne.

The National Bank of South Africa, LIMITED.

NOTICE TO SHAREHOLDERS.

NOTICE is hereby given that an Extraordinary General Meeting of Shareholders of this Bank will be held in the Board Room of the Bank Buildings, Pretoria, Transvaal, on Friday, 22nd November, 1918, at 12 o'clock noon, to consider, and if approved, pass the following resolution:—

"That the Capital of the Bank be increased to £4,000,000 (Four Million Pounds, sterling) by the creation of 100,000 (One hundred thousand) shares of £10 (Ten pounds sterling), each to be issued in such manner, at such times and upon such terms as the Directors shall from time to time determine."

The Share Transfer Registers of the Bank will be closed as follows:—

- (a) At the Head Office, Pretoria, from 19th to 23rd November, 1918, both days inclusive.
- (b) At the London Office from 8th to 12th October, 1918, both days inclusive.

Attention is drawn to the following:—Holders of Share Warrants to Bearer are entitled to vote by proxy. Such shareholders desiring to be present or represented at the Meeting must deposit their Share Warrants at either of the places, and within the times stated below:—

- (a) At the Head Office of the Bank, in Pretoria, at least Three Days before the day fixed for the Meeting.
- (b) At any of the Branches of the Bank in South Africa at least Eight Days before the Meeting.
- (c) At the London Office of the Bank, Circus Place, London Wall, E.C., at least Thirty Days before the Meeting.
- (d) At Messrs. Cox and Co. (France), Ltd., Paris, at least Thirty days before the Meeting.
- (e) At the Rotterdamche Bankvereeniging, Amsterdam, at least Thirty Days before the Meeting.
- (f) At the New York Agency of the Bank, 10, Wall Street, New York, at least Forty Days before the Meeting.

The instrument appointing a proxy must be deposited at the Office in Pretoria, not less than 48 hours before the time fixed for the Meeting at which the person named in such instrument proposes to vote.

By Order of the Board of Directors,
C. P. MATHEWS, Secretary.

Pretoria, 21st September, 1918.

NOTE.—It is not contemplated to increase the Bank's paid-up Capital immediately, or even in the near future to the amount mentioned in the proposed Resolution, but the Directors deem it desirable to ask Shareholders to give them power to create the additional shares from time to time at their discretion in the event of the necessity arising to utilise further capital.

PIETERSBURG MUNICIPALITY.

ELECTRIC POWER STATION EXTENSIONS.

TENDERS are invited for the supply and delivery of the following plant in connection with the proposed extension of the Electric Power Station of the above-mentioned Municipality:—

(1) One Steam Boiler having a capacity of about 3,000 lbs. steam evaporation per hour. A water-tube type is preferred.

(2) One Steam Engine capable of driving a generator of about 100 Kilowatt capacity. High-speed type preferred.

(3) One three-phase 50 period alternator of about 100 Kilowatt capacity, complete with exciter, etc., preferably direct coupled to its driving engine.

(4) About 200 alternating current House Meters—240 Volts, 3, 5 and 10 Ampere capacity—and to take over about 200 direct current 230 Volt Chamberlain & Hookham meters.

Full particulars of plant must be submitted with tenders.

Further particulars regarding requirements may be obtained from Professor W. Buchanan, 75, Louis Botha Avenue, Houghton Estate, Johannesburg, or from the Resident Engineer, P.O. Box 111, Pietersburg.

Tenders must be addressed to the **Town Clerk, Pietersburg**, and marked on the outside "Tender for Machinery," and must be handed in not later than **12 noon on MONDAY, SEPTEMBER 30th, 1918.**

S. F. GOCH,
Town Clerk.

Pietersburg,
Town Clerk's Office,
6th September, 1918,

Engineering Notes and News.

THE HUME CONCRETE COLUMNS.

Successful Initial Construction of Columns in Tasmania.

ACCORDING to *The Advocate and Times* of Devonport, Tasmania, the first one of the 600 concrete columns to be used instead of the usual wooden piles in the construction of the wharf inside the new breakwater at Burnie, for the accommodation of deep sea vessels, was turned out recently by the Hume Pipe Co., who are the contractors for the work. The firm's plant has been installed in the blockyard at the harbour works, near the cement mixing house, and the proceedings were in the nature of a trial, which proved satisfactory in every way. In the manufacture of the columns the firm has established a new branch of its activities, which previously have been confined to the manufacture of water pipes. If the results can be taken as any criterion, the innovation is a distinct success, and a splendid product of the ingenuity of the firm, who were the inventors of the process. The method of manufacture is simplicity itself, and like most present-day inventions is economic in the use of manual labour. The only part of the process where a human being is essential, except, of course, for driving the motor, is for shovelling the cement into the mould, and two or four men will suffice for this work. Weighing ten tons, the columns are 10 ft. long by 4 ft. 6½ in. in diameter, and resemble a huge pipe more than anything else, the cement being 12 inches in thickness. To produce them a steel cylinder is placed on four wheels driven by an electric motor, and revolving at the rate of from 250 to 300 revolutions to the minute, the cement is thrown in, and the centrifugal force thus produced forces out the water into the centre. It takes but a quarter of an hour from the time the mould is set in motion until it is ready for removal, and the column is then lifted to a storing place by the Goliath crane. An idea of what the process is may be gauged from the fact that immediately the mould is stopped it is impossible to make an impression on the cement by pressing a finger on it, however hard. It is anticipated that from four to six blocks per day will be turned out once the plant commences the work, and the contract will take about six months to complete. It is interesting to mention that in the construction of pipes three 12 in. pipes can be turned out in seven minutes. The firm make down to 4 in. pipes, and the moulds revolve at a much more rapid rate for the smaller work, decreasing in speed with the increase in the pipe. During the next week or so a public demonstration will be held, to which the wardens of the Hobart Marine Board will be invited, as they are particularly interested in the scheme, in view of the fact that the board contemplate replacing piles in their wharves at an early date, and desire information on the concrete columns. To obtain the necessary height in constructing the wharf, the columns will be placed on top of

each other, cemented together, and secured by an 8 in. steel band on the outside at the joint. The cavity in the centre of the column will be filled with sand. The board's engineer (Mr. W. Reid Bell), as well as the Tasmanian representative of Messrs. Hume Bros. (Mr. T. S. Nettlefold, of Hobart), were present, and the former was perfectly satisfied with the results obtained.

Swaziland Tin.

The following are the results of the operations of this company for the month of August, 1918:—Concentrate recovered, 32.5 long tons; estimated profit (taking tin at £290 per ton), £2,609; adjustments in respect of previous shipments, £448; total, £3,057. A dividend of 2½ per cent. (6d. per share) has been declared for the period ended September 30.

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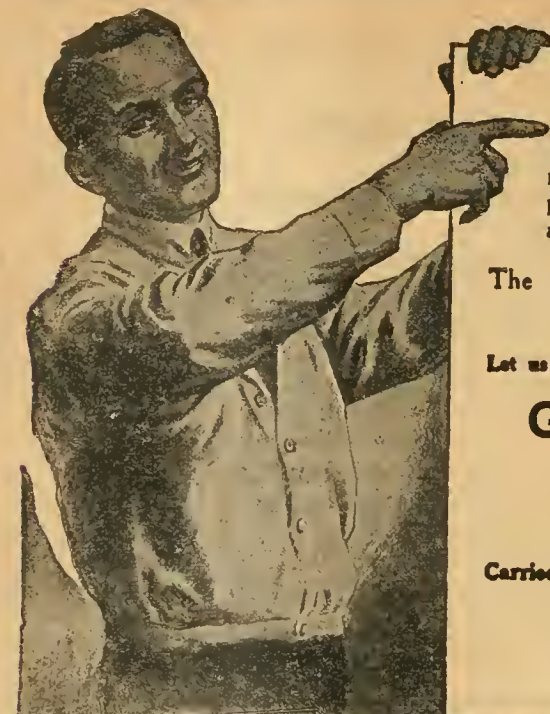
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Kimberley, Salisbury and Bulawayo.



New Companies.

The following is a list of the companies registered in July, 1918:—

5601. Ziman Bros. Ltd., 394, Vermeulen Street, Pretoria; capital £5,000. Private company.
5602. Rassen Dawood, Ltd., Helen Street, Amersfoort; capital, £1,500. Private company.
5603. Osman and Noor, Ltd., 165, Prinsloo Street, Pretoria; capital, £2,000. Private company.
5604. H. J. C. Groenveld Trading Co., Ltd., East Avenue, Parktown, Johannesburg; capital, £10,000. Private company.
5605. Kajeas, Ltd., corner Solomon and 14th Street, Vrededorp; capital £400. Private company.
5606. The Denver Timber and Sawmills, Ltd., 35/36, Exploration Buildings, Commissioner Street, Johannesburg; capital, £3,000. Private company.
5607. Globe Manufacturers' Agencies, Ltd., Room 12, 46, Jeppe Street, Johannesburg; capital, £1,000. Private Company.
5608. St. Andrews' Buildings, Ltd., 222, St. Andries Street, Pretoria; capital, £2,500. Private company.
5609. The Invalid Chair and Cabinet Works, Ltd., 105, Pritchard Street, Johannesburg; capital £2,000. Private company.
5610. African Mining Corporation, Ltd., 23, Standard Bank Buildings, Commissioner Street, Johannesburg; capital, £100. Private company.
5611. The African Financial Agency, Ltd., 4, Bell's Buildings, corner Harrison and Main Streets, Johannesburg; capital, £1,000. Private Company.
5612. The Kholvad Trading Co., Ltd., Von Hagen Street, Carolina, capital, £500. Private Company.
5613. G. H. Garach and Brother, Ltd., 5, Bells' Buildings, corner Main and Harrison Streets, Johannesburg; capital, £500. Private company.
5614. MacDonald, Forman and Co., Ltd., 96, Frederick Street, Johannesburg; capital, £10,000. Private Company.
5615. Salt Agencies, Ltd., Steytler's Buildings, Loveday Street, Johannesburg; capital, £1,000. Private company.
5616. East Rand Trading Co., Ltd., corner 5th and 4th Avenues, Springs; capital, £500. Private Company.
5617. Cassiterites, Ltd., 68, Market Street, Johannesburg; capital, £1,500. Private Company.
5618. Corio Saw and Planing Mills, Ltd., Corio Saw and Planing Mill, Durban Street, City and Suburban, Johannesburg; capital, £8,000. Private company.
5619. A. Cyril Webber and Gilham, Ltd., No. 8, Oceana Buildings, Simmonds Street, Johannesburg; capital, £5,000. Private company.
5620. Dapoi Estates, Ltd., 5, Bells Buildings, corner Main and Harri-son Streets, Johannesburg; capital, £500. Private company.
5621. The Grootman Collieries, Ltd., 20, Corporation Buildings, Commissioner Street, Johannesburg; capital, £12,000. Private company.
5622. African Canning and Packing Co., Ltd., 1st Floor, Realty Trust Building, corner Simmonds and Market Streets, Johannesburg; capital, £50,000. Private company.

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New Patents.

466. The Hon. Sir Charles Algernon Parsons.—Improvements in the mounting of reflectors.
467. Francis Levitt Impey and Morland and Impey, Limited.—Improvements relating to loose leaf binders.
468. Francis Levitt Impey and Morland and Impey, Limited.—Improvements relating to loose leaf binders.
469. Francis Levitt Impey, Morland and Impey, Limited, and Thomas Pilkington.—Improvements relating to loose leaf binders.
470. E. R. Calthrop's Aerial Patents, Limited.—Improvements relating to parachutes.
471. E. R. Calthrop's Aerial Patents, Limited.—Improvements relating to safety spring slings particularly adapted for use with parachutes.
472. Edward Hale Belden.—Improvements in steering mechanism.
473. Edward Hale Belden.—Improvements in motor vehicles.
474. International de Lavand Manufacturing Corporation, Limited.—Improvements in process and apparatus for the manufacture of metal articles by rotary or centrifugal means.
475. Joseph Richard Broadiey.—Improvements in or relating to machines for grinding ores, minerals, stones, and the like.
476. British United Shoe Machinery (South Africa), Limited.—Improvements in or relating to the marginal folding and perforation of boot or shoe uppers.
477. Henry Brooker.—Improved coin-free apparatus for delivering postage stamps, labels, admission tickets or the like from a strip.
478. Robert Emmett McCauley.—Improvements in and relating to the manufacture of glass articles such as bottles, jars and the like.
479. Baltiska Kullager Aktiebolaget.—Ball holders for ball bearings and method for manufacturing the same.
480. Gianni Caproni.—Improvements in or relating to flying machines.
481. Gianni Caproni.—Improvements in or relating to flying machines.
482. Federico Caproni.—Improvements in flying machine construction.
483. Paul Wilson Furney.—Process of making, and new food product of milk.
484. Edward Rogers and Tolfree.—Method of stopping leaks in radiators and the like, and composition for same.
485. Empire Cream Separator Company.—Improvements in milking machinery.
486. Tubmersole and J-L Motors, Limited.—Improvements in bearings submerged in water or other liquids.
487. Tubmersole and J-L Motors, Limited.—Improvements in the construction of electric generators and motors for working under water or other liquid.
488. Harry August Stockman.—Improvements in the wheels of road vehicles and the like.
489. Lionel Isaac Harris.—Improvements in dust catching apparatus for use with rock drills.
490. Lionel Isaac Harris.—Improvements in collecting dust from air.
491. Lionel Isaac Harris.—Improvements in purifying air in mine working places.
492. G. E. Richardson.—New easy vulcanizer.
493. General Electric Company of Schenectady.—Improvements in and relating to methods of producing alloys.
494. General Electric Company of Schenectady.—Improvements in and relating to the manufacture of steel.
495. The South African Horse-Shoe Manufacturing Company, Ltd.—A new and improved multiple drilling machine.
496. W. H. Haytor.—Improvements in and relating to cam-levers.
497. Henri Boulard.—An improved process for the manufacture of alcohol from grain in open vats, with the employment of saccharifying mucors.
498. Aidan Nicholas Henderson.—Improvements relating to the construction of floors, roofs and the like.
499. Barney Rosenberg.—Improvements in safety brakes for haulage systems.
500. Thomas Meachen.
501. William Francis De Brandt.—Improvements in and relating to harvesting machines.
502. Charles Robert Rogers.—Improvements in the manufacture of oil pastes from wet precipitated pigments and the separation of free water therefrom.
503. Sydney Harold Bruton.—An improved method of constructing slabs of parquetry or wooden mosaic.
504. George Alfred Julius Culwulla Chambers.—Manually controlled machine for printing and issuing differentiated tickets and recording the issue thereof.
505. Arthur Harold Sinel.—Improved means for use in fastening the ends of bale bands together.
506. Ernest Moss.—Improvements in and relating to the raising, lowering, and depth regulation of ploughs and other agricultural implements and vehicles.
507. Dunlop Rubber Company of Australasia, Limited.—Improvements in means for retaining valves in position in pneumatic articles.
508. Harry Studdart Cullen.—Food preparation and process of making same.
509. Marc Wilmot Fink.—An improved shearing machine.
510. William Henry Gordon.—Improvements relating to stamp-heads of stamper bars.
511. Frederick William Koster.—A new and improved wine, and process of manufacturing the same.
512. Ernest Winsor Gray.—Improvements in means for emptying tins and the like.
513. Alexander Gemmell.—Improvements in deep well pumps and the like.
514. Louis Robert Vierdag.—A new method of extracting oil from whales and all kinds of fish.
515. David Laird.—Mine Dust allayer.
516. James Birt Morgan.—Improvements in or connected with domestic and other firegrates.
517. Edgar Arthur Ashcroft.—Improvements in the manufacture and production of chemically re-active alloys.
518. Edgar Arthur Ashcroft.—Improvements in the manufacture or production of hydrogen, with, or without, other constituents.
519. Edgar Arthur Ashcroft.—Improvements in the manufacture of nitrogen.
519. Edgar Arthur Ashcroft.—Improvements in the manufacturing of nitrogen and the removal of oxygen from mixtures of gases containing it and the obtainment of useful products of, or resulting from, oxidation, and de-oxidation.
520. Alfred Charles Montague Sedgwick.—Improvements in balancing devices for windmills.
521. Peter Kippenberger.—“The Wallingford Thatch Presses.”
522. Aktiebolaget Atlas Diesel.—Improvements in pneumatic rock drilling machines.

The Administrator of Southern Rhodesia has made arrangements to give effect to the offer of the B.S.A. Co. to grant land for settlement to ex-service men from overseas who are physically fit for farm work, and are in possession of a minimum capital of £1,000. Applicants are required to undergo a probationary training with experienced farmers in Rhodesia in order to qualify for a grant of land. A further area of land in Southern Rhodesia for ex-service men amounting to 54,433 acres, is being placed at the disposal of the company by Willoughby's Consolidated Company, Mashonaland Agency, and Rhodesian Railways. Six other companies are offering large areas of land to an aggregate extent of 153,000 acres to ex-service men from overseas on exceptionally favourable terms, while individual land owners have offered assistance in other ways. It is said that 80,000 acres out of a total of 250,000 have already been allocated.

Land for Ex-Soldiers.

In some notes on antimony in the Transvaal, read by Mr. N. M. Galbreath, before the S.A. Association of Analytical Chemists, are described the processes which have been tried in connection with the extraction of antimony and gold from the ores of the Murchison Range of the North-Eastern Transvaal, in which as much as 10 per cent. of antimony, accompanied by about 4 dwts. of gold per ton occurs. This industry is much hampered by climatic conditions; a trackless bush, and even lions, have to be contended with; and in addition the ore is refractory though valuable. If full extraction could be obtained a pre-war value of £4 per ton (now £10 per ton) is estimated. The apparent enclosure of part of the gold in the stibnite renders the usual processes for gold recovery useless, and although flotation is successful, it is too wasteful. The caustic soda process, if successful, removes practically the whole of the stibnite from the ore, leaving the gold in the residue, from which it may be extracted by cyaniding. An ordinary filter-press is suitable for obtaining a clear antimonial solution, which is then carbonated with CO₂ from limestone. This precipitates an oxysulphide of antimony, which is insoluble in the NaHCO₃ produced by the carbonation, and is filtered off, washed, dried, and either burnt to antimony oxide (for paint) or smelted to metal. The NaHCO₃ is reconverted to NaOH by means of the lime from the limestone originally used, so that the process is continuous and regenerative. The weak points in the process are (1) the necessity of dissolving nearly all the Sb if the Au is to be extractable; (2) solution of colloidal silica in the soda; and (3) expense of heating solutions. Liqation or melting-away of the easily-fusible Sb₂S₃ in reverberatory furnaces, with sloping triangular hearths, has also been tried. This certainly produces a product capable of bearing railway rates, and shipping costs for smelting in Europe, but the yield is only about one-third of the total antimony in the ore. Nevertheless it is the only process which gives a reasonably high daily output. The bulk of the gold remains in the unliqated residue, and a good deal of antimony volatilises. Flotation was successful

Transvaal Antimony.

on an experimental scale. An agitator going at from 1,100 to 1,500 feet per minute, and discharging into a frothing-box was used, the concentrate being skimmed from the top of the latter. About 8 lbs. lubricating oil and 9 lbs. H_2SO_4 per ton of ore were used to obtain flotation. In some cases high extractions—60 per cent. of the Sb and 80 per cent. of the Au—were obtained. Large scale experiments in a flat-type Hoover machine gave, however, much worse results, and "frothers," e.g., eucalyptus oil, creosote, and coal-tar were found to give better results than lubricating oil. Unfortunately the trials had to be abandoned, but the cause of variation is suspected to lie in the variable proportions of gas-producing carbonates, etc., in different samples of the ore, combined with the fact that too little time for contact is given in a large-scale apparatus. The process of oxidising stibnite concentrate to antimony oxide is also described, the cost being estimated at 46s. per ton; that of smelting trioxide to metal is estimated at about £10 per ton of metal. At present, shipped concentrate (50 per cent. Sb) brings in about £25 per ton, at a cost of £7 for transit, equal to a profit of 4d. per lb. of antimony metal, and to get this profit we have to reject more than half of our ore, whereas the local price of antimony metal is over 3s. per lb. Surely such a state of affairs should lead to serious attempts to do our own smelting in the Transvaal.

* * * *

The Ministry of Reconstruction forwards the following:—

Imperial Mineral Resources Bureau.

At the Imperial War Conference last year it was agreed that it was desirable to take steps to set up an Imperial Mineral Resources Bureau, which should be charged with the duties of collecting information from the appropriate departments of the Governments concerned and from other sources, regarding the mineral resources and metal requirements of the Empire, and of advising from time to time what action, if any, may appear to be desirable to enable such resources to be developed and made available to meet the metal requirements of the Empire. Accordingly a special Committee (under the chairmanship of Sir James Stevenson) was appointed to examine this proposal and to report upon the duties and administrative responsibilities of the proposed Bureau. The Committee defined the duties of the Bureau as follows:—

(a) To collect, co-ordinate and disseminate information as to resources, production, treatment, consumption, and requirements of every mineral and metal of economic value.

(b) To ascertain the scope of the existing agencies, with a view ultimately to avoid any unnecessary overlapping that may prevail.

(c) To devise means whereby the existing agencies can, if necessary, be assisted and improved in the accomplishment of their respective tasks.

(d) To supplement these agencies, if necessary, in order to obtain any information not now collected which may be required for the purposes of the Bureau.

(e) To advise on the development of the mineral resources of the Empire or of particular parts thereof, in order that such resources may be made available for the purposes of Imperial defence or industry.

After consideration of the report of this Committee, the Government instructed the Ministry of Reconstruction, in consultation with the Secretaries for the Colonies and India, to take the necessary action to give effect to the recommendations of the Imperial Conference and the findings of the Committee. Detailed proposals were accordingly submitted to the Dominion and Indian Governments, who nominated their representatives on the governing body of the Bureau, and the general scheme of the Bureau has now been finally ratified by the Imperial Conference. The Bureau will be incorporated by Royal Charter, and the governing body, which will be under the presidency of the Lord President of the Council, will consist of the following: Sir Richard Redmayne, K.C.B. (chairman); nominated by the Canadian Government, Dr. Willet G. Miller; by the Government of the Commonwealth of Australia, Mr. W. S. Robinson; by the Government of New Zealand, Mr. Thomas Hutchinson Hame, of the High Commissioner's office; by the Union of South Africa, the Right Hon. W. P. Schreiner; by the Government of Newfoundland, Lord Morris; by the Government of India, Mr. R. D. Oldham, F.R.S.; by the Secretary for the Colonies, Mr. J. Evans, D.Sc.L.; by the Minister of Reconstruction (in consultation with the Institution of Mining and Metallurgy, the Institution of Metals, the Iron and Steel Institute and the Institute of Mining Engineers), Mr. W. Forster Brown (Mineral Adviser to H.M. Woods and Forests); Professor H. C. H. Carpenter (President of the Institute of Metals); Dr. F. H. Hatch (Member of Mineral Resources Advisory Committee of the Imperial Institute); Sir Lionel Phillips, Bart. (lately Director of the Mineral Resources Development Department, Ministry of Munitions); Mr. Edgar Taylor (Ex-President of the Institute of Mining and Metallurgy); Mr. Wallace Thorneycroft (President of the Institution of Mining Engineers). Mr. Arnold D. McNair has been appointed secretary. All communications regarding the Bureau should be addressed to the Secretary, Imperial Mineral Resources Bureau, Holborn Viaduct Hotel, E.C.

Company Meetings.

TRANSVAAL G.M. ESTATES.

The annual meeting of shareholders of the Transvaal Gold Mining Estates was held on September 25th in the board-room, Corner House.

Mr. H. C. Boyd, chairman, in his review of the operations of the company, and in moving the adoption of the report and accounts, said:—During the 12 months ended March 31st last, with which the report before you deals, 182,635 tons in all were milled, or 11,220 less than during the previous year, the decrease being virtually all at the Central Works, due to severe shortage of labour and to the serious floods during the latter part of the financial year which for long handicapped transport of material and rendered sections of the mines unworkable. The conditions under which work had to be carried on were for some months trying in the extreme, and we are indebted to Mr. Barry and his staff for the good work accomplished in the face of much discouragement. In accord-

ance with the lower value of the reserves the average recovery fell just over 1 dwt. per ton, the decrease at the Central Mines being nearly 1½ dwt. per ton. As much prospecting as circumstances permitted was accomplished, but expenditure under this head was necessarily lower, and the total working costs per ton milled showed a slight decrease. This is creditable, considering that the development redemption charge at the Central Mines was increased during the greater part of the year and bearing in mind the enhanced war allowances to employees and cost of all stores.

The net profit for the year was £93,759, from which two dividends of 5 per cent. and 3½ per cent. respectively were declared, absorbing £52,869. Taxes amounted to £3,872 and debenture redemption to £14,136, reducing the value of the debentures outstanding at the close of the year to £34,000. The net debit to capital account, of which full details are given in the directors' and general manager's reports, was £8,736. The unappropriated balance of cash and

cash assets less liabilities was increased to £138,559, as detailed in the directors' report.

Company's Interests.

Although, as compared with former years, the technical information is somewhat reduced, the general manager's report covers the work of the past year in detail. Except at Vaalhoek and Elandsdrift, prospecting continues to be confined to the neighbourhood of the Central Mines. There is nothing really definite to add to the information contained in the report; much prospecting remains to be done in the Beta Extension Area, and there are undoubtedly encouraging indications on the Portuguese reef horizon on the Jubileo and Theta Extension Hills and above Kameels Creek such as afford great scope for active operations; and these will be prosecuted to the utmost extent permitted by the available labour, which which unfortunately is at present inadequate for the work in hand. It must be realised that, at the best, tangible results can

of much time and money, but it may safely be said that the prospects of making favourable disclosures are appreciably better than they were at this time last year. Unfortunately, until fresh discoveries of more valuable reef are made and fully developed, profits must remain at their present low level.

Olifantsgraaft has been let on tribute, the tributor undertaking to do a certain footage of development monthly, and it is possible that similar arrangements will be made in regard to the portion of Grootfontein on which some thousands of tons of payable ore have been exposed, as the indications are more favourable and the available labour can better be employed in prospecting elsewhere.

Although the alluvial testing machinery has not yet come forward, it has been possible to test the ground in the Central Area sufficiently by hand labour to lead to the conclusion that this does not constitute a payable proposition.

Central Mines.

The ore reserves at the Central Mines were increased to over 408,000 tons at 31st March, but the average value declined by 1 dwt. per ton to just under 9 dwts. The increase in tonnage is mainly due to the Ponieskrantz North Mine, where 127,000 tons of a little over 8 dwts. per ton had been exposed. Development has since continued satisfactorily there; the reserves have been materially added to by ore of similar value, and there is every reason to believe that a very considerable further tonnage remains to be exposed in this mine—although at the moment there is some indication of decrease in percentage of payability and of a tendency for the reef to turn pyritic. A small tonnage is now being forwarded to the Central Mines by the electric tramway, which has been extended some four miles, involving some heavy cuttings, the work generally reflecting great credit on those responsible for the construction. On the completion of the loading bins in about two months' time, a considerably increased tonnage will be dispatched.

Brown's Hill, the reserves of which are of grade similar to those at Ponieskrantz, has also continued to open up satisfactorily as regards tonnage, and here again a large additional tonnage may be looked for.

It has recently been decided to abandon development to the dip of Peach Tree and Duke's Hill South Mines, as results over a long period have been consistently unpayable. Peach Tree and Iota areas are still yielding some fresh tonnage of payable ore, but undoubtedly the reserves of Duke's Hill and Peach Tree will now gradually be exhausted.

The Columbia Hill Shales section, which has for some time been affording a regular supply of ore for the mill, maintains its relatively high but erratic values.

The other mines in the Central Section ere, as a whole, about holding their own, the reserves having been somewhat increased this year at some and decreased at others.

Elandsdrift, which at 31st March, had 73,810 tons developed of an average value of 14.8 dwts., suffered very severely from flooding during the past summer, and it is only recently that any development has been possible. Values in the mine proper continue satisfactory, but the open cast can only now supply 8 dwt. ore, and that for a limited period. The water troubles will only be finally solved if the workings can be drained by the shaft, which is being sunk a consid-

erable distance to the dip. The sinking of this shaft has been lately resumed, but additional electric power is required, and application has been made for the right to erect a hydro-electric station on the Nel's River. A capital outlay of about £13,000 will be entailed, and this has only been approved of after much consideration, but the prospects of the mine appear to warrant the outlay, heavy as it is. Recent profits have been low at this mine, but results are now more normal and may be expected to continue so.

War conditions have militated against the development of the wattle bark sales, but somewhat improved results are looked for this year.

Glynn's Reef.

At Vaalhoek satisfactory progress has been made on the Glynn's Reef, for the discovery and energetic opening up of which credit is due to the manager, and last January over 21,000 tons of 10 dwt. ore had been developed on this reef, but the workings were suddenly flooded by what can only be described as an underground river. Credit was therefore not taken for any of this ore in the reserves, which at the close of the financial year were returned at just over 35,000 tons of an average of 8 dwts. Thanks to the steps since taken, this Glynn's Reef development has virtually all been recovered, and there is reason to hope that a considerable extension of this reef—in which admittedly the values are very erratic—will eventually be disclosed. Meantime heavy expenditure has been entailed, and some £4,000 have yet to be spent in connection with new pumps and a drainage scheme, so that the profits of this mine will for several months be little, if any.

The working profits for the first five months of this financial year are only £18,452; provision must be made for taxation and debenture redemption for the half-year, amounting to approximately £8,000; while capital expenditure has absorbed some £7,500. It is considered advisable to draw on accumulated profits in order to pay a small dividend, and one of 2½ per cent., absorbing £15,105, has therefore just been declared by the board.

Mr. Warriner, to our regret, resigned his position as consulting engineer on his departure for America, where he is now doing important war work, and Mr. E. H. Clifford has recently been appointed in his place. Mr. Clifford recently paid a brief visit to the property, and has written a report which clearly summarises the position of affairs. The report will therefore be circulated to shareholders with the proceedings of the meeting.

We have to record with deep regret the recent death of Mr. Robert Charlton, one of our oldest employees, and the loss of Messrs. W. A. Jones, P. W. Stirton, C. B. Brown, and F. Ball, fallen on active service. A large percentage of our employees remain on service, five of whom are unfortunately prisoners of war.

The report and accounts were adopted.

The meeting confirmed the appointment of Mr. J. L. Siddall as a member of the London board in place of Mr. C. Pakenham (resigned), and re-elected the retiring directors, Messrs. H. C. Boyd and B. T. Bourke.

Messrs. Howard Pim and Charles Stuart were reappointed auditors, and voted 200 guineas each for the past audit.

RAND KLIP.

At a special meeting of shareholders of Rand Klip, Ltd., held at 10.30 a.m. on Sept. 23 in the boardroom, National Bank Buildings, resolutions were passed for the

liquidation of the company. There were 147,880 shares represented out of an issue of 432,336.

The reasons for liquidation were explained by Mr. W. Dalrymple, who presided. He said:—This meeting has been convened for the purpose of considering the desirability of placing the company in liquidation and distributing the shares and options on shares in the Modderfontein East, Ltd., which were received from that company as the purchase price of your company's mining property, etc., sold to it in 1917. The position in which European shareholders are placed, owing to the restrictions imposed upon share dealing and subscription of capital in the United Kingdom, has caused considerable delay in bringing these resolutions before you. When first application was made to the Imperial Treasury for an amelioration of the position of the European shareholders, the importation of the Modderfontein East scrip into the United Kingdom was prohibited. Numerous representations have been made to the Imperial authorities to allow European shareholders to take up their Modderfontein East shares and options, and to give the same freedom in dealing in them as is permitted in this company's shares, but the only concession that has been allowed is that the issue of Modderfontein East shares and options will be permitted in England provided they are not dealt in in the United Kingdom so long as the present Stock Exchange temporary regulations are in force. Should the options expire before dealings are permitted in the United Kingdom, unless a modification of the restrictions is made in the meantime, European shareholders will not be permitted to take up their options, but individual shareholders can make arrangements (through their brokers) to sell in South Africa should they so desire. The share register will not be closed on liquidation of the company, but will remain open until further notice is given by the liquidators in order that, should European shareholders desire in the meantime to retain their negotiable shares in this company, instead of converting them into non-negotiable shares and options in the Modderfontein East, Ltd., they may do so. The position of the shareholders in South Africa is different. There are at present no restrictions on the sale of Modderfontein East shares or options, or on exercising the options, and South African shareholders consider that their position is prejudiced owing to the delay in distributing them. As a result a very extensively signed requisition has been received by the board asking that the company be placed in liquidation forthwith, and the shares distributed; and as it would appear that no good purpose is to be served by further delay, the board acceded to the request of the requisitionists, and this meeting has been called in consequence.

Imperial Restrictions.

Your board regrets that circumstances compel it to place the present resolutions before you without having first succeeded in clearing up the position of the European shareholders. Every endeavour has been made to get the Imperial authorities to relax their restrictions so as to allow free dealing in the United Kingdom in shares and options in the Modderfontein East, Ltd., but without success, and in fairness to the South African shareholders the board is of opinion that we should now proceed with the distribution of the Modderfontein East shares and options and the liquidation of the company without further delay. If the resolutions to be placed before you to-day are passed, immediately on the passing of the confirmatory resolution on the 16th October, the liquidators will issue a circular to shareholders inviting them to exchange their Rand Klip

shares for shares and options in the Modderfontein East, Ltd., and clearly setting forth the procedure to be adopted. The first resolution you are asked to agree to provides an alteration to the articles of association empowering the liquidators to distribute to shareholders in specie or kind, all or any part of the assets of the company. This alteration is necessary to enable the Modderfontein East shares and options to be distributed. The second resolution provides for the voluntary winding-up of the company. The third resolution provides for the appointment of liquidators, with a definition of their powers and duties, and the fixing of their remuneration. Certain shareholders, owing either to the war or other circumstances, may be unable to take up their shares and options prior to the expiry of the option periods. To protect the interests of such shareholders it is necessary to grant the liquidators power to sell such options on behalf of the shareholders concerned. It is also thought desirable that after a reasonable period has elapsed the liquidators should have power to sell on behalf of the shareholders concerned all unclaimed shares and options in the Modderfontein East, Ltd. This resolution, therefore, empowers the liquidators to sell all or any Modderfontein East shares and options which have not been applied for by shareholders entitled to them within a period of 18 months from the date of liquidation.

The resolutions were put and carried without objection.

KROONSTAD COAL ESTATE CO.

The annual general meeting of shareholders in the Kroonstad Coal Estate Company was held in the company's office, 9 and 11 Cheapside, Kimberley, on September 20. There were present: Messrs. F. S. Lynch, in the chair (and q.q. Mrs. Lynch and Miss H. P. Lynch), F. Hirschhorn (and q.q. De Beers Consolidated Mines, Ltd.), Alpheus F. Williams, W. Pickering, W. H. Carter, F. J. Gardiner (and q.q. Mrs. L. Beaton), Joseph Buck, J. J. T. King (q.q. Mrs. R. McFarland and D. van Ulsen, and F. J. Beaton (secretary).

On the motion of Mr. Gardiner, seconded by Mr. Pickering, the report and balance sheet were taken as read.

The Chairman said: Proceeding to the accounts, I might invite your attention to some outstanding features. In the balance sheet you will notice that the reserve fund has been increased from £500 last year to £1,500, which sum has been specially set aside as a fixed deposit. This is to provide for compensation to be paid to tenants of our farms on the expiration of their leases, which will generally fall in 1922. It will be competent then to consider various suggestions which have been made from time to time as to the disposal of surface rights; farms can either be released as at present, cut up and surveyed into smaller lots for "closer settlement," or sold outright, always reserving the mineral rights. Taxation appears in a much larger sum; it covers, as you see, income and dividend taxation for 1917, as well as the estimated tax for 1918. A dividend of 5 per cent., or 1s. per share, has been declared, and was paid out on the 16th September, free of tax.

Coal sales—on the credit side—show a material increase of £3,900. Interest and commission is improved owing to larger sums being lent out, at short dates. The trading store is

£60 better. In this item we have to contend against considerable competition; while we carry on a solid business, and make practically no bad debts as shown on the debit side, our competitors give much more extended credit, with probably larger losses. Though the profit is not great, the store is a distinct advantage to our own employees, and serves as a means towards contentment on a property somewhat distant from towns. Shortage of native labour has had detrimental influence on profits also. Farm rents show a satisfactory improvement, due to increased rentals obtained from leases fallen in and re-let at shorter dates, so that nearly the whole will be at our disposal in 1922. Farming shows an improvement of over £200, and we hope, with ordinarily favourable conditions, to show still better results.

To go back to the coal output, I might point out that the increase amounts to 12,670 tons. Your directors have had under consideration methods of increasing this by pushing the sale to merchants in different towns. These efforts have met with encouraging success, and in the next few months will, we hope, be considerably developed to the company's advantage.

De Beers Consolidated Mines are our largest consumers, as in the past; possibly their consumption may increase, though it would not be reasonable to look for that until the war ends—a very uncertain condition.

Throughout the year our costs of winning coal have been low and regular, and in spite of increased costs of material affecting us in many directions, we hope they will remain low.

In the working of the mine some important improvements have been made, notably the extension of the underground mechanical haulage, which much reduced manual labour, and made the work of natives lighter. This was a specially desirable result, because of the difficulty found in keeping the supply of labour up to the required standard and number. There were difficulties in this direction, which were for a time rather a serious handicap but they have been overcome.

Maintenance of machinery and buildings has received considerable attention to keep things up to good working order. It is proposed to put in a new electrical lighting plant to facilitate the work below ground, and to provide power for pumping, etc. In this respect we see a reduction of costs in the near future. This new plant will be a replacement and larger to meet developments.

During the year tests of the calorific value of the coal were made for us by De Beers Consolidated Mines, which showed a definite improvement in the quality of coal. A test was made also by the South African Railways in locomotives running on the Germiston-Witbank line, but unfortunately the quality was found not suited—by reason of its slow burning qualities—for locomotives hauling heavy loads. However, slow burning coal is well suited to domestic use, and it is in this direction that we are looking for increased consumption of our products.

Mr. Alpheus F. Williams seconded the adoption of the report and accounts, which were agreed to.

There being only one nomination, that of Mr. W. H. Carter, for the vacancy on the directorate, Mr. Carter was re-elected.

On the motion of Mr. Brink, seconded by Mr. Hirschhorn, Messrs.

J. Pooley and F. J. Gardiner were appointed auditors, the question of their remuneration being left to the directors.

A vote of thanks to the Chairman, proposed by Mr. Williams, terminated the proceedings.

TRANSVAAL CHAMBER OF MINES.

At the general meeting of members of the Transvaal Chamber of Mines on Monday, September 23rd, the President, Mr. E. A. Wallers, in moving the adoption of the report of the Executive Committee, said: The national importance of our gold production and the peculiarly difficult position during the war of gold producers has been referred to by me on many occasions in this chamber. These features are naturally always prominent in our minds, but just recently the whole subject has rightly received added public attention as a result of the work and the statements made in London by Sir Lionel Phillips and those associated with him. The Union of South Africa's need for the continuance, in the greatest degree possible, of its great revenue producing industry is definitely clear, and not less clear, in our opinion, is the British Government's need of our gold for her own and her allies' requirements. In our mind this fact remains of the greatest significance, not only when we consider its application in the earlier stages of the war, when the Empire's capacity for production was vastly less than that required to pay the enormous imports necessitated by the war, but also to the present times when the demand for our product is nearly as great, and with similar force, I venture to suggest, for the future, in the rehabilitation and reconstruction of industry when this war is over.

It might be useful at this juncture briefly to review the position as regards our output for the eight months of this year ended 31st August last. The gold produced by the Witwatersrand for that period was £23,667,542. The output for the corresponding period of last year was £24,983,234, showing a decrease in our gold production for the first eight months of the year of £1,315,694. In the same period, working costs show an increase of £468,698 and the working profit a decrease of £1,623,896. That, gentlemen, is the position broadly from the point of view of the gold mining industry as a whole, and it is sufficiently serious. When, however, one examines the conditions of individual companies whose output is included in this total, the position is still more grave. Of the 49 companies whose output is included in the above total, at least six were making an actual working loss. In addition to that number, there were approximately 15 showing a small working profit, but we know that their standing charges, in the nature of obligations with regard to taxation, miners' phthisis compensation, allowances to men on active service, and debenture liabilities, turn the small working profit shown into an actual loss. I need not labour the point that producers of gold are in a different position to that of any other producer, in that they have to bear the whole of the burden resulting from any increase in the cost of production. The representations recently made by gold producers the world over is broadly to the effect that having in mind the initial difficulty to which I have just referred, and the admitted fact of the particular value of gold during the period of war, and period of construc-

tion thereafter, some form of relief should, in consequence, be given. Various methods have been put forward, and it is understood that an expert committee to investigate the subject is to be appointed in London.

Chamber's Modest Suggestion.

In the meantime, you will remember that the Chamber's modest suggestion before the Select Committee on Low Grade Mines was in the nature of some relief in costs, with particular application to reduction in cost of realisation. So far, we have received no further information as to the fate of our suggestion, but the figures of our particular position, which I have just quoted, show that for a considerable section of the companies on these gold fields the position is growing increasingly acute. We have really hung on remarkably well, and shall concentrate all our energies in continuing to do so in the interests of all concerned. There is, however, the fact that for some companies, at any rate, and under existing conditions, the end is growing very near; it would be a pity if the actual closing down of some of the mines was required to bring home our real position.

White Employees.

The most important event that has occurred with regard to industrial conditions of white employees since our last meeting has been the acceptance of the Chamber's offer by the men as the result of a ballot. You will recall that the men's demands on behalf of the Mechanics' Unions was for an increase in the standard rate to £8 2s. a week, and as regards the miners, an increased war bonus. In its reply, the Chamber definitely stated it was unable to agree to an increase in the standard rate to £8 2s. a week, but maintained the policy—I think the right policy—of offering in respect of all employees a sliding scale of war bonus, to rise or fall according to the increase or decrease in the cost of living in comparison with pre-war standards. As regards all employees, other than mechanics, this is based on the previous method, namely, it is applicable to married employees with dependents, and single employees with total dependents, and is, in part, a bonus on the wages earned, and also an allowance for each dependent. Similarly, as regards mechanics, the previous method had been admitted, namely, the total war bonus has been spread over married and single employees alike by an increase in the war allowance, which they have hitherto been receiving in addition to their rate of wage per hour.

The men's demand and the Chamber's offer have been published in the Press and it is, therefore, unnecessary for me to deal with them in detail. The fact that that offer has been accepted on a ballot bears, I think, satisfactory testimony to the Chamber's policy in the past three years of discussing frankly with the men the position of the industry, placing the facts on the table, and inviting them to share the responsibility of deciding what is the best course to be taken in the particular circumstances under consideration. Compared with the attitude that existed a few years ago between employer and employed—as I ventured to say in a recent speech—that amounts to an industrial revolution

in the affairs of this industry, and a revolution of the right type, a quiet and definite change of thought. The further outstanding fact that is shown by the ballot, is, I think, that the men have appreciated our position; and we who have more particularly represented the industry at these conferences can testify to the increasing sense of mutual responsibility, and, in my opinion, the thorough justification of the confidence that has been placed in the men's attitude.

Men's Sense of Responsibility.

The ballot has shown, too, that although the "swing of the pendulum" under the law of supply and demand, is at present in favour of the men, that, as the result of the facts having been placed before them, they have not endeavoured to exact the full toll under that law; and further, that they are prepared to bear a proportion of the increase in the cost of living. It is true if the men had decided to exploit the principle of supply and demand to its full extent, it would have reacted very seriously on a large section of the workers, many mines would have to close down, and although a certain proportion of them might have been earning higher wages, a large number would have been thrown out of employment, and the whole community very adversely affected. None the less, the situation required a very true understanding by our employees of the effects of any such action as theirs on their less fortunate fellow-workers and on the community as a whole, and, therefore, it is that I desire on behalf of the industry to express our appreciation of that sense of responsibility which the ballot has shown has actuated them.

Underground Contract System.

Very considerable progress has been made, in conjunction with the South African Mine Workers' Union, in agreeing upon a standard form of underground contracts; several meetings have been held and there are but one or two points outstanding which it is hoped will shortly be satisfactorily settled. I feel sure that it will require but very little experience of the new contract in practice to establish its superiority over the old agreement, more particularly in the direction of avoiding those difficulties and disputes which in too many instances occurred as the result of the existing form of contract.

Native Labour.

As will be seen from the report in your possession, the native labour position for the three months under review has, so far as the number of natives employed by the industry is concerned, not experienced any material fluctuation. The number of natives in the service of gold mines, diamond mines, and collieries in labour areas at the end of August was 196,294, as compared with 195,863 at the end of May, being a net increase of 431. The industry is still suffering, unfortunately, from a distinct shortage of labourers, only 73 per cent. of complements being available. Excluding natives registered to contractors, the number employed by members was 183,135 and 181,945 respectively, being a gain of 1,190. The number of natives distributed to members in labour areas for the period

June-August was 54,810, which was practically absorbed by wastage of 53,620. The total number of natives engaged from all sources during the period under review was 55,953, being slightly below the number secured during the period March to May. Coincident with August last year the number of natives recruited for August 1918, shows an appreciable gain over the previous two months, and though it is not possible to speak with any degree of certainty, it is anticipated that the improvement in the number of natives offering their services will be maintained during the remaining months of the year.

Mortality Rate Satisfactory.

The mortality rate has remained extremely satisfactory, being in the neighbourhood of 13 per thousand. With a view to attempting to reduce the incidence of pneumonia amongst mine natives, it has been decided, after conferring with mine medical officers, systematically to inoculate all natives against this disease with Dr. Lister's pneumococcal vaccine. On engagement each boy will receive one cubic centimetre of pneumococcal vaccine, followed at intervals of seven days by two further doses. It is hoped that these measures will, as time progresses, confirm the highly satisfactory results attained by the Crown Mines, Premier Diamond Mine and De Beers, where, as you know, thorough inoculation against this disease has been in vogue for some time with most gratifying results in the saving of life.

Since our last meeting a very serious accident occurred at the Meyer and Charlton, resulting in the loss of many valuable lives. More recently many members of this community are mourning the loss of relatives through the sinking of the Galway Castle by an enemy submarine. I am sure you would wish me, on behalf of our members, to render our most sincere sympathy to the relatives of those who have been bereaved.

Obituary.

The recent death of Mr. Francis Oats, after a long period of suffering, has removed a prominent figure from the mining world. Mr. Oats was not directly connected with the gold mining industry, but he had been intimately connected with the fortunes of the diamond mining industry, in the building up and maintenance of which he had played so considerable a part. I desire to express our very sincere sympathy with the relatives of Mr. Oats on the loss they have sustained.

Mr. Mascal seconded the adoption of the report of the Executive, which was carried unanimously, and the proceedings terminated.

Those present at the meeting included Messrs. A. A. Auret, Paul Dreyfus, S. Evans, Geo. Falcke, W. J. Gau, A. G. Gill, E. G. Izod, J. Jeppe, H. O. Mascal, C. Meintjes, A. F. Mullins, J. Munro, S. M. Nelson, F. Raleigh, E. H. Read, P. Richardson, D. W. Rossiter, W. S. Smits, T. G. Suter, A. J. Wright, P. Cazalet, W. Dalrymple, A. French, W. T. Graham, M. Honnet, G. Imroth, J. Jordan, G. Kent, A. F. Lyall, F. R. Lynch, L. S. Raymond, E. J. Renaud, V. J. Ronchetti, and G. Sonn.

Union Corporation, Ltd.

At the further extraordinary general meeting of shareholders in A. Goerz & Co., Ltd., held last Saturday, Mr. H. Newhouse presiding, the resolution passed on the 30th August last to change the name of the company to Union Corporation, Ltd., was confirmed as a special resolution in terms of the Companies Act, 1909.

Manicaland Output.

The mineral output of the Territory of the Companhia de Moçambique (Manicaland) for the month of August, 1918, was as follows:—Alluvial: Gold won (fine), 710 ozs. 13 dwts.; cubic metres dredged, 63,400; value, £2,945 18s. 11d. Copper: Copper declared, 15 tons; value, £1,500.

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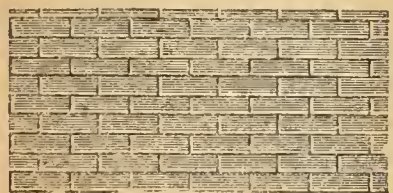
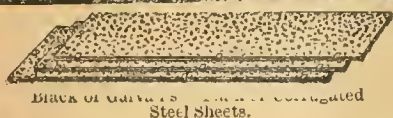
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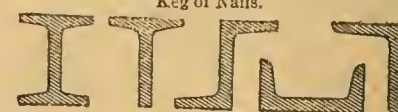
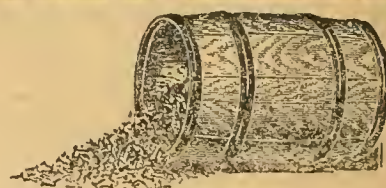
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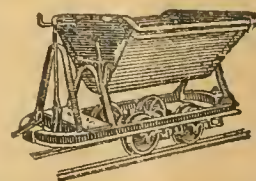
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Notes and News.

The lowest workings on the main incline from the Turf Mines shaft of the Village Deep have now reached sea level, i.e., 5,633·69 ft. vertical, which is the greatest depth at which mining is now done on the Rand. All the natural obstacles to working at this depth have been successfully overcome. The rock pressure has proved the chief obstacle, but this has been countered by the special methods of support adopted. The increased heat has likewise been offset by adequate ventilation. In regard to the values of the ore exposed in development at this depth it is satisfactory to note that they justify the favourable anticipations by Mr. H. F. Marriott, recently published. Another feature is the fact that the improved Whiting hoists have worked most satisfactorily, thus considerably simplifying the problem of winding at great depths.

We understand that Mr. T. Blandford, of the Francois Cementation Process, has reported on the water troubles of the Rezende Mine, which he says can be overcome by the application of the process. This will put an end to the only serious difficulty that has menaced the progress of the property of late.

In mail week, the famous Cornish tin mine, the Levant, was closed down, owing to a miners' strike, and even pumping had been discontinued. The late Mr. Francis Oats and his son, Captain Oats, were largely interested in the mine.

The epidemic of Spanish influenza, which first made its appearance on the Rand last week, has followed the course which has been experienced in all the other countries where this malady has made its appearance. An official statement issued last week by the Chamber of Mines is as follows: "The Chamber of Mines intimates that the outbreak of Spanish influenza will affect the operations and profits of most of the mines for September and October. The epidemic is spreading to all the mines, but owing to the rapidity with which persons affected recover, its effect on operations, although noticeable, is not likely to be serious." At the Driefontein shaft of the E.R.P.M. a hoisting engine driver was suddenly attacked by the malady, with disastrous consequences to nineteen natives in an ascending skip. A Government enquiry is proceeding.

Under the joint auspices of the V.F.P. Co., Ltd., and Messrs. Lewis & Marks, a new flotation, the Largo Colliery Company, Ltd., has been formed and registered with a nominal capital of £110,000. This company has acquired from the East Rand Mining Estates, Ltd., the coal rights in perpetuity over a portion of the farm Grootvlei No. 26. Satisfactory results have been obtained from the various boreholes which were put down. A great portion of the equipment has been acquired, and all necessary steps taken to bring the colliery to the producing stage at as early a date as possible. The plant of the Schapensrust Colliery was recently acquired for the new company.

Nothing more has been heard of the projected flotation of a new industrial finance corporation by the National Bank, though it is noteworthy that an extraordinary meeting of the National Bank of South Africa is convened for 22nd November for the purpose of authorising the directors to increase the capital to £4,000,000 by the issue of 100,000 shares of £10. It is not contemplated to increase the Bank's paid-up capital immediately, or even in the near future to the amount mentioned, but the directors think it

desirable to ask shareholders to give them power to create the additional shares from time to time at their discretion in the event of the necessity arising to utilise further capital. The National Bank has been appointed agents in Africa for the British Trade Corporation, Ltd., and for the Public Trustee, England.

* * * *

The secretary of the Southern Van Ryn Reef Co., Ltd., writes:—With reference to the press notice on the 23rd ult. to the effect that in the No. 4 borehole at a depth of 2,804 feet a reef had been intersected on shale contact, the analyses of samples from a section of 9 inches of the core gave the following results:—No. 1 hanging wall quartzite, width 1 in., value 0.2 dwt. per ton; No. 2 banket reef, width 2 in., value 0.5 dwt. per ton; No. 3 banket reef, width $\frac{1}{2}$ in., value 1.0 dwt. per ton; No. 4 shale, width 2 in., value nil; No. 5 shale, width 2 in., trace; No. 6 shale, width $1\frac{1}{2}$ in., trace. On account of considerable grinding of the core at the reef-shale contact, it cannot be said that a full reef section was obtained. In appearance and value the section recorded above is similar to sections frequently met with between pay shoots in Sub Nigel development.

* * * *

A conference of the newly-formed Diggers' Union of the Transvaal took place in the Palace Theatre at Bloemhof on Thursday, the 28th ult. The various Governmental departments were well represented. Keen interest was taken in the new movement, and before the close of the meeting in the afternoon there were quite 200 people present in the hall. Mr. A. van der Merwe, as president of the newly-formed Transvaal Diggers' Union, was in the chair, supported by Mr. H. Warington Smyth, Secretary of Mines and Industries; Mr. S. J. Brink, Chief of the Gold and Diamond Detective Department of the Transvaal; Inspector Graham, of the Diamond Detective Department, Griqualand West; Mining Commissioner Mr. Herbert Rees, Klerksdorp; Mining Commissioner Mr. Nixon, Pretoria; Mr. E. J. J. van der Horst, the local member; Mr. Fick, M.P.C.; Commandant Kunhardt, District Commandant of Police; Commandant Swartz; Mr. Charles Orpen, of the Mines Department; and by special invitation, Lieut.-Colonel O'Donovan (Barkly West), along with the President of the Vaal River Diggers' Union (Mr. F. P. Cook, J. P.), and the General Secretary (Mr. Thos. L. Terpend), and Mr. H. Williams (General Secretary, T.A.D.D. Union). Several important recommendations were made to the Government.

* * * *

The sinking of the borehole on the southern boundary of the farm Eendracht, owned by the Oceana Development Co., Ltd., is no doubt being watched with considerable interest by shareholders in adjoining properties, equally with those of the company most directly interested, says a London exchange. The option which was held over Spaarwater has been exercised and, as already publicly announced, this farm is to be floated off as a subsidiary of the Lace Proprietary Mines, which has been reorganised under the auspices of Sir Abe Bailey and Mr. Dale Lace, with a programme which is designed to provide some £1,400,000 of additional working capital. Sir Abe Bailey is likewise interested, as to one-third, in Maraisdrift with the Rhodesia Exploration Co., Ltd. (late Amalgamated Properties), which holds the other two-thirds. To the south of Maraisdrift is the farm Klippoortje, the outcrop end of which is held under option by Houtpoort, Ltd., whilst the deep level section, adjoining Spaarwater, has recently been acquired by the H.E. Proprietary, Ltd., for £100,000, payment being made by the allotment of 200,000 shares of 10s. each. Next in rotation come the Town Lands of Heidelberg, of which a portion was proclaimed a public goldfield over 20 years ago, containing some 3,000 claims. The majority of these are held by a company called the Eastern Van Ryn Modderfontein Gold Reefs, Ltd., the capital of which was privately subscribed. The same remarks apply to the Boschfontein Gold Mines, Ltd., holding an option over the

farm of that name lying between the Heidelberg Town Lands and Boschhoek, a portion of which latter farm is owned by the Heidelberg Estates and Exploration Co., Ltd., through its shareholding in the Boschhoek Proprietary Co., Ltd., and the remainder is understood to be held by the Estates Co. under option. The deep levels of these three last mentioned properties, the Town Lands of Heidelberg, Boschfontein and Boschhoek, are held or controlled by the Oceana Development Co., Ltd., and the New Albion Transvaal Gold Mines, Ltd., and it is on this horizon that the Oceana borehole is being put down.

* * * *

The total value of the mineral output of the Union for August was £4,153,400, a decrease of £25,168, compared with July. The gold output was valued at £3,138,146, silver at £15,741, an increase of £2,294, diamonds at £642,627, a decrease of £3,369, coal £282,293, a decrease of £12,329, copper £73. There was no declaration of copper in July. Tin was £48,036, a decrease of £14,633 and other base minerals £26,496, an increase of £875. The Transvaal coal output of 575,069 tons was 18,963 tons less than in the previous month. The Cape produced 404 tons, an increase of 51, the Free State 75,346 tons, a decrease of 1,675, and Natal 220,444 tons, a decrease of 8,169. The labour figures show that 32,296 whites and 266,341 coloured people were engaged in mining throughout the Union in August, the former being an increase of 111 and the latter of 228.

* * * *

The Water Power Committee of the Conjoint Board of Scientific Societies, who were appointed "to report on what is at present being done to ascertain the amount and distribution of water power in the British Empire," in a preliminary report just issued say that they have endeavoured to collect all available relevant information, from which the main conclusions to be drawn are:—

- (1) That the potential water-power of the Empire amounts in the aggregate to at least 50 to 70 million horse-power.
- (2) That much of this is capable of immediate economic development.
- (3) That except in Canada and New Zealand, and to a less extent in New South Wales and Tasmania, no systematic attempt has as yet been made by any Government Department to ascertain the true possibilities of the hydraulic resources of its territories or to collect the relevant data.
- (4) That the development of the Empire's natural resources is inseparably connected with that of its water-powers.
- (5) That the development of such enormous possibilities should not be left to chance, but should be carried out under the guidance of some competent authority. In view of these conclusions the Committee submit the following recommendations:—

- (1) That the British Government bring before the notice of the Indian Government, of the various Dominion Governments and of the governing bodies of the Crown Colonies the necessity for a close systematic investigation of all reasonably promising water powers, and of their economic possibilities.
- (2) That the British Government take steps to ascertain whether the Governments concerned are prepared to undertake this work.
- (3) That where such an inquiry is beyond the powers of any governing body the British or Imperial Government place the work under the direct control of an "Imperial Water Power Board" or "Conservation Commission."
- (4) That the Government take steps to initiate the formation of such an "Imperial Water Power Board" or "Imperial Conservation Commission," to include a representative from each of the Dominions and Dependencies.
- (5) That this Board act in an advisory capacity. (It is suggested that all schemes for the development of which local resources are inadequate should be submitted to the Board by the Governments concerned, and that the Board should make recommendations on which the Imperial Government might take action.)
- (6) That since it is unlikely that private capital will be available for many years for hydraulic development on any large scale, powers should be obtained to enable the State to assist or to undertake such development if thought advisable. It is suggested that much might be done to attract

private capital if the State, after careful investigation, were to guarantee a suitable minimum interest on the necessary capital, sharing at the same time in any profits beyond the amount necessary to provide that interest. By this method of assistance private enterprise would be untrammelled and the management of the concerns so assisted would remain in private hands.

* * * *

Through a printer's error, on page 61 of our issue of the 28th instant, under the heading "Swazi-land Tin, Ltd.," we stated that "A Dividend Correction. dividend of 2½ per cent. had been declared for the period ended 30th September."

As was made clear elsewhere in the same issue, this referred to the dividend of 2½ per cent. recently declared by the Transvaal Gold Mining Estates, Ltd. The Swazi Tin Company's last declaration was one of 25 per cent. for the period ended 30th June, 1918, when the financial year closed. The next declaration in the ordinary course will be made in December.

* * * *

The Miners' Phthisis Commission, presided over by Sir Willem van Hulsteyn, M.L.A., resumed its proceedings last week, when evidence was given by Mr. T. G. Trevor, Inspector of Mines, Pretoria district, who gave details of the position in regard to miners' phthisis as affecting the smaller mines which did not fall under the existing schedule. He suggested that a commission of medical men should be appointed to go into the whole position of those mines and make recommendations as to what steps should be taken to deal with any cases that might occur or to prevent any cases occurring. Mr. Trevor, in passing, mentioned that a case of phthisis had occurred some years ago in the Sheba Mine. The mine paid this particular man the same compensation as he would have been paid if he had been working on one of the scheduled mines. The Sheba, however, was not placed under the schedule, as the contribution which the mine would have had to pay to the Miners' Phthisis Fund would have been far in excess of the amount which it would have to pay the one man. In examination by Mr. Sampson, M.L.A., Mr. Trevor said that he did not deny that silicosis could be contracted on some of those smaller mines, but it would be necessary for a man to work in such mines for such a long time before he could contract it that it would be hardly fair to schedule such mine. There was really very little dust in those places—in fact, there was a good deal more in the streets of Johannesburg. In some parts of the Sheba Mine, Mr. Trevor added, you might go down in your dress clothes. Mr. Trevor mentioned the Pilgrims Rest area particularly as being free from dust. Replying to Dr. De Jager, the witness said the personal element on the outside mines was responsible for the small accident rate, although the working in those mines was infinitely more dangerous than in the big mines. The white men in the outside mines, however, took every risk which the natives took, and that, to his mind, was the reason why there was such a small accident rate. Mr. Warrington Smyth, the Secretary for Mines, gave evidence this week.

* * * *

A correspondent of one of the London financial papers writes:—We have now, in the light of

The Question of State Lotteries. this War Lotteries Bill result, either to connive at bazaar lotteries, tombolas, raffles, etc. (however good their object),

or prosecute those responsible for them, and thus lose in the course of a year hundreds of thousands, if not millions, of pounds that would otherwise have been subscribed to Red Cross and other funds in alleviation of the sufferings of those who are winning the war. One of the members who opposed the Bill said that it was unworthy to suggest that money for the Red Cross would not be provided without recourse to lotteries. Money will, of course, be provided, but shall we get anything like as much if the harmless methods now adopted—and which it is quite properly desired to legalise—are stopped? The fact is that there is need of every stimulant that can be devised and that the legalising of the employment of an element of chance to achieve the desired end is by no means an unworthy object.

TOPICS OF THE WEEK.

WAR AND THE MINING INDUSTRY.

THE General Mining and Finance Corporation is the last of the parent companies to hold its annual meeting for 1917, and the Chairman's review, therefore, covers the latest developments in the industry. In our last issue we noted the emphatic warning in regard to the plight of the low-grade mines uttered by Sir George Albu and by the President of the Chamber of Mines, and a study of the position of several mines of the Albu group, as set out by the Chairman, amply justifies that warning. None of the daily papers printed Sir George Albu's speech in full, but our report, in this issue, gives his address in unabridged form. The actual detailed facts regarding certain of the West Rand subsidiaries of the group should be read with the general conclusions in regard to the difficulties of the low-grade mines, to which attention was directed in our last issue. The natural reluctance against closing down an unpayable mine which, under more favourable post-war circumstances may be turned into a profitable concern, is well illustrated in the case of the Roodepoort United. At that property, as at others, the struggle is being maintained in face of increasing difficulties, and doubtless the dramatic change in the war outlook that has occurred in the last few days will encourage all concerned to continue their efforts. Dealing with the effect of war conditions, Sir George said that the President of the Chamber of Mines last year referred to the total burden of increased costs borne by the industry as then amounting to over £5,000,000 per annum. He went on to declare that any variation during the past six months had been in the direction of enlarging rather than reducing that figure. He showed that, so far as the Corporation was concerned, the increased outlay on stores, active service pay, war bonus and higher rates of pay, and the additional holiday concessions, represented a total of not less than 3s. 3d. per ton milled. This was the direct effect on working costs only, and was exclusive altogether of the war levy on profits and the increased gold realisation charges. The effect of this 3s. 3d. per ton amounted to an extra cost of £232,000 per year on the mines under the control of the Corporation. He analysed the other burdens added to the industry as: (1) A general shortage of skilled white men. (2) A serious shortage of natives, and consequent reduction of tonnage milled. (3) A less efficient type of native being recruited for the mines, possibly as the result of sending a native labour contingent to Europe and of the opening up of new industries. (4) The inferior quality of certain classes of stores as compared with pre-war standards. (5) The shorter hours worked, notably as regards the Saturday shift. A great deal might be written under these separate heads, but it is enough to state that, with one exception, all are bound up with the generally conceded reduction of labour efficiency—white and black—noticeable in recent years. Authorities differ regarding the extent of the effect of the reduced working hours on labour efficiency, but it seems safe to say that none of the benefits theoretically supposed to flow from shorter hours have yet been traceable on the Rand. Regarding the mines under the Corporation's control, Sir George Albu said it was with regret that he had to state that the shorter hours now being worked had a distinctly adverse influence on the results obtained. In addition to this, there could be no doubt that, taking the group as a whole, the general efficiency of the men was distinctly below the pre-war standard. It was an indisputable fact that the serious difficulties with which several of the lower grade mines now had to contend could be appreciably lessened if they could obtain a better standard of efficiency from their white employees. Mr. H. S. Meyer, in public, and other prominent engineers, in private, have lately expressed themselves very strongly of the same opinion, and it is to be hoped that the fact will have some effect in awaking the workers to a realization of the meaning of a fair day's work for a fair day's pay. Sir George Albu is the first of the leaders of the industry to speak out loud and clear on the subject, and it is to be hoped that the effect will be to concentrate attention on its importance.

RECENT PROGRESS IN RAND MINING AND METALLURGY.—I.

Presidential Address Read Before the C. M. & M. Society.

[By H. S. MEYER, M.I.M.M., A.R.S.M.]

I PROPOSE to place before your notice, in a condensed form, a few notes relative to recent progress in mining and metallurgy in South Africa, with some suggestions in regard to the direction in which members of this Society can advantageously direct their efforts in furthering the interest of this industry, which we all have at heart. Most of you have been intimately connected for many years with the professional side of the industries from which the Society takes its name; you are fully aware that we are credited by our fellow professional friends in other countries with great conservatism and lack of originality. Nevertheless, every year something takes place which lifts our technical practice on to a sounder footing, and I make bold to say, very frequently becomes standard practice in other parts of the world. The past year has been remarkable in the respect that the Union of South Africa has become directly interested in a number of large mining ventures on the Far East Rand, and many who have been accustomed in the past to look upon their employers as residents of Europe, now find themselves—in a sense—"civil servants" of the Union Government, and as employees of the public, who to-day are far more directly interested in mining—partly by purchase and partly through the State interest—than they have probably ever been at any time in the history of this country. A closer, more critical and more sympathetic interest in our premier industry can therefore be anticipated.

NEW DEEP SHAFTS.

In spite of the general difficulties with which we are periodically faced, accentuated by the restrictions necessarily placed on imports, there is more activity in the direction of opening new mines than for many years past. New deep shafts are being sunk on Sub Nigel, on Daggafontein, on Springs Mines, West Springs (2), New State Areas (2), Modderfontein East (2), Brakpan (2), City Deep, Robinson Deep, Crown Mines (2), Durban Rodepoort Deep, and Randfontein (2), whilst still others are projected. As yet there has been no definite decision as to the superiority of one shape of shaft against another, i.e., circular against rectangular; on the whole, the rectangular still predominates, and a most interesting discussion could be raised regarding their respective merits by the partisans of the two types.

DEVELOPMENT.

The general scheme of development shows little alteration; in mines where the dip of the formation is small, development in the first instance is carried on broad lines and subsequently in a more intensive fashion, partly for the purpose of more accurate valuation of ore reserves, partly to render the developed ore more accessible for subsequent stoping, and partly to secure an evenness of grade, which I fear will always be necessary in order to comply with that unpleasant requirement, viz., uniformity of monthly returns. I have from time to time heard engineers express their opinion as to the cost to the industry entailed by this demand, and have heard it placed as high as 2s. per ton milled. It seems a great pity that at a time like the present, when the cost of gold production is ever on the increase, the industry should be saddled with an unnecessary burden of this description. I doubt if this subject has ever been sufficiently ventilated, and few realize the effect on mining costs created by the fact that, in order to maintain an average output over short periods, ore has to be taken from an enormous number of working places, and it is only in exceptional cases that any proper scheme of concentration can be carried out under such conditions. The system of carrying main collecting roads in Main Reef or in the foot-wall continues to be the rule in mines where the pressure resulting from great depths renders it necessary to adopt

this practice in order to maintain communications; the disadvantage of this system lies in the quantity of valueless rock that is obtained from this form of development. When provision is made to either pack such waste underground or to take it direct to the surface, this system is beyond criticism, but where such arrangements are absent, the quality of the ore mined becomes seriously vitiated. Turning to the subject of detail development, the practice to-day is to make winzes and raises much wider than in the past. The advantages obtained are numerous; ventilation is improved and stopes can be opened up with greater rapidity, and the additional cost is met by the greater quantity of milling ore obtained; in fact, it may be argued that the width carried should, within reasonable limits, be proportional to the value of the ore requiring development.

UNDERGROUND TRANSPORT.

Underground tramming equipment of heavier pattern continues to be installed, and the general tendency is to deal with greater loads at moderate speed, requiring heavy and well laid tracks. Longitudinal concrete foundations for incline shafts are gradually replacing transverse wooden sills, which were for so many years regarded as the standard support for the permanent way. The use of animal transport over short mechanical haulages over long distances is making gradual headway. I am inclined to think that the value of the former method has not yet been sufficiently realized, taking into consideration the saving of native labour and its relative cheapness and efficiency.

THE JACK HAMMER.

Improvements in stoping practice are extremely slow, and there appears to me no evidence of increased efficiency except where natural conditions or improved appliances are responsible. One may, however, express gratification that after many years' search some types of small machines, i.e., one-man machines, have been obtained, which, it is fervently wished, will gradually replace the hammer boy and some of the heavier types of old-fashioned rock-drills. This type of machine, generally known as the Jack Hammer, is capable in trained hands of drilling the same footage in a shift as half-a-dozen hammer boys under similar conditions. Without going into details at this stage, there is no doubt that this type of machine has come to stay, and those engineers who have been responsible for its design, and the men who have achieved its practical application deserve the thanks of the industry. The removal of ore from the point where it is broken at the stope face to the nearest collecting station still constitutes perhaps the most difficult underground problem. When it is realized that fully one-third of the total underground native labour force on an average mine is engaged in this apparently simple occupation, it will be understood that improvement in this direction is of the utmost importance. Although numerous ingenious devices are frequently introduced, their net effect is discouraging. One can only presume from this that as long as the native is kept at one constant level, he will retaliate with a standard of work of which he is the sole arbiter.

(To be continued.)

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FOREIGN CAPITAL AND BRITISH INDUSTRY.

How to Amend the Companies Acts—Report of Special Committee.

ON the 27th February the Board of Trade appointed a Committee "to enquire what amendments are expedient in the Companies Acts 1908 to 1917, particularly having regard to circumstances arising out of the war and of the developments likely to arise on its conclusion, and to report to the Board of Trade and to the Ministry of Reconstruction." The following gentlemen were then appointed:—The Rt. Hon. Lord Wrenbury (Chairman); Mr. Arthur S. Comyns Carr; Sir Frank Crisp, Bart.; Mr. George Welsh Currie, M.P.; Mr. Frank Gore-Browne, K.C.; Mr. James Martin; The Hon. Algernon H. Mills; Mr. Richard David Muir; Mr. Christopher T. Needham, M.P.; Mr. Henry A. Payne, C.B.; Sir Owen Philipps, K.C.M.G., M.P.; Sir William Plender, G.B.E.; Mr. Owen C. Quekett; Mr. Andrew Wilson Tait. Though dealing primarily with the United Kingdom, the report has interest for South Africa. The Committee issued in the first instance a number of questions to selected persons and bodies of persons competent to assist them in the matter. These included persons conversant with banking, commerce, law, shipping, accountancy, and the Stock Exchange. Evidence was also given before them orally by 17 witnesses.

FOREIGN CAPITAL.

The question which lay in the forefront of their investigations and to which they attributed prime importance was that of the employment of foreign capital in British industries. In their report they state:—The preliminary question whether it is desirable that foreign capital should be freely attracted to this country is one upon which there was little, if any, difference of opinion. The maintenance of London as the financial centre of the world is of the first importance for the well-being of the Empire; anything which would impede or restrict the free flow of capital to the United Kingdom would in itself be prejudicial to Imperial interests, and any legislation which would tend to impede or restrict the free flow of capital here by imposing restrictions or creating impediments ought to be jealously watched, lest in the endeavour to prevent what has come to be called "peaceful penetration" the normal course of commercial development should be arrested. It is to be borne in mind that at the conclusion of the war—if it should be concluded upon such terms as we hope and anticipate—there is no probability that the countries which are now the enemies of the Allies will be those which will be in possession of capital looking for external employment. Outside the countries of the Allies it may be said, speaking generally and subject to exceptions of no great moment, that Europe will have little surplus capital to invest. The foreign capital which we have to contemplate will be capital flowing not from the Central Empires of Europe, but from other parts of the world, of which America may be the chief. To impose restrictions upon the influx of capital, aimed at our present enemies, with the result of deterring the flow of capital from (say) America, would be a policy highly injurious to the economic recovery and renewed prosperity of this country after the war. For these reasons we are of opinion that in all amendments of the law falling within the scope of our reference the expediency of the attraction of foreign capital should be steadily borne in mind, and anything which would have a restrictive or deterrent effect should, as far as possible, be avoided.

At the root of the whole matter, they add, lies a question which is not one of company law amendment at all, but one of high political and economic policy. The alien may come here to trade in any one of three characters. He may come as an individual; he may come in conjunction with others as a firm; or he may come in the form of a corporation. The fundamental question is whether in any one of these cases he ought or ought not to enjoy the same commercial freedom as the British subject British-born; and, further, whether, if some aliens ought to come freely, other aliens

who are now our enemies ought to have the same facilities. It does not fall within our province to enquire whether the traditional policy of this country to admit and welcome all who seek our shores and submit themselves loyally to our laws ought, in the case of some and what aliens, to be revised; whether any and what restrictions ought to be imposed upon the alien who, in any one of these three characters, seeks to come here; or whether discrimination ought to be made between an alien of one nationality and an alien of another. That is a question of high political and economic policy which it is not for us to determine. The question of naturalised British subject as distinguished from British subject British-born is, again, beyond our sphere. We may probably assume that, as regards aliens generally, there is no intention to change the traditional policy of the country, and that we have to enquire whether—that being so—any amendment of the law of joint stock companies is expedient having regard to circumstances arising out of the war. But, as regards aliens who are now our enemies, it may be that the British Empire may adopt the policy that a special stigma ought to be attached to the German and that neither as an individual, nor as a firm, nor as a corporation ought he, for a time at any rate, to be admitted to commercial fellowship or to any fellowship with the civilised nations of the world. The existence of these questions has greatly increased the difficulty of our task, for until the policy is known, it is not possible to say how the Companies Acts should be amended to give effect to it. It has thus become necessary for us to indicate our conclusions in alternative form according as the policy adopted in these respects is one or another.

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"Viking" BRAND Launder Lining.

From the evidence before the Committee, and from deductions to be drawn from some recent legislation, they recognise that there exists (in some quarters at any rate) a desire—probably a strong desire—to ascertain and record the extent to which aliens are active in commerce here. The legislation to which they refer is:—(1) The Registration of Business Names Act, 1916 (which, although originating as a projected measure long before the war, yet was pressed forward as a war measure because disclosure of nationality was, as a consequence of the war, made a prominent characteristic); (2) the Companies (Foreign Interests) Act, 1917, whose purpose was to prevent the elimination from articles of association of provisions restricting the amount of capital which might be held by aliens; (3) the Companies (Particulars as to Directors) Act, 1917, whose effect was, amongst other things, to enforce disclosure of the nationality of directors; (4) the British Ships (Transfer Restriction) Acts of 1915 and 1916, which rendered void any transfer not approved by the Board of Trade of any share of a ship or even any mortgage of a share of a ship to a person not qualified to own a British ship or to a "foreign controlled company"; and (5) the Non-Ferrous Metal Industry Act, 1918, which we shall have to consider further when we come to the case of companies engaged in "key industries." Of these Acts, Nos. (4) and (5) were limited in time with reference to the continuance of the war, but Nos. (1), (2) and (3) were not. In April, 1916, the Committee appointed by the Board of Trade to investigate the general question of trade relations after the war reported against imposing restrictions upon aliens becoming shareholders in British corporations, but in favour of "definite information as to the nationality of the shareholders in every British company." On the other hand, Lord Balfour of Burleigh's Committee, in December, 1917, discouraged any attempt to secure this information. Many of those who have made written replies to the questions, put by Lord Wrenbury's Committee, or who gave evidence before them, expressed opinions in favour of disclosure of nationality by all shareholders and in some cases of limitation of the proportion which aliens may hold of the share capital of a company. Others, on the contrary, are impressed with the mischief which may result from restrictions whose tendency will be to deter the influx of foreign capital. The report therefore states:—In the recommendations which follow in this report we have sought to bear steadily in mind the considerations on the one side and on the other, to which we have directed attention. We have not hesitated to express our own opinion as to the way in which, in our judgment, the balance falls, but inasmuch as it is for the Legislature to determine whether the policy of complete commercial freedom, or that of alien restriction generally, or alien restriction as regards certain aliens, is to be preferred, we have indicated what in each of these alternatives are the amendments of the law of Joint Stock Companies which we think should be adopted.

ALIEN SHAREHOLDERS.

If foreign capital is to be attracted here it follows that, so far as such capital is invested in or utilised for the industries of Joint Stock Companies, it must be represented either by shares in such companies or by debentures representing indebtedness by them, and that its employment must be controlled by Boards of Directors appointed from time to time by the owners of the invested capital. The question, therefore, is whether restrictions ought to be imposed upon the extent to which the control of the company shall be allowed to reside in aliens, either by reason of their holding a majority of the shares, or of the debentures, or by reason of their obtaining a majority upon the Board of Directors; and if so, how the disclosure of their alien character is to be enforced. Before dealing with this question the Committee point out difficulties which present themselves in the way of securing disclosure of nationality and ensuring that aliens shall not command the control, assuming that it is desirable to prevent their doing so. The law of trusts is firmly established in this country. If A be the registered holder of a share, he is not necessarily the beneficial owner. He may be a trustee for B. To enact that the registered holder must be a British subject effects nothing. For B

may be an alien and an enemy. Suppose, however, that you enact that A, when his share is allotted or transferred to him, shall make a declaration that he holds in his own right, or that he holds in trust for B, and that both A and B are British subjects. There is nothing to prevent the creation of a new trust the next day, under which C, an alien enemy, will be the person beneficially entitled. Further, at the earlier date (the date of allotment or transfer) the facts may be that A (a British subject) is trustee for B (a British subject), but that B (unknown to A) is a trustee for C, an alien enemy. The fact that B is trustee for C would be purposely withheld from A, and A's declaration that he was simply trustee for B would be perfectly true. To require that A should make a declaration at short intervals (say, once a month), or that A, B, C, and so on, should all make declarations would be, of course, so harassing and so detrimental as to be as a matter of business impossible. The only effectual way of dealing with the matter would be by a provision that the share might be forfeited, or might be sold and the proceeds paid to the owner, if an alien should be or become beneficially entitled to or interested in the share. Such a provision does not in the general case commend itself to us as practical or desirable.

CONTROL OF BOARDS OF DIRECTORS.

Similar difficulties arise in any endeavour to control the nationality of the Board of Directors. It is easy, of course, to ensure that they shall all be, or that a majority of them shall be British subjects. But there is no means of ensuring that their actions shall not be controlled by aliens whose nationality is not disclosed. Having pointed out these difficulties, the Committee approach next the question of policy. Bearing in mind the sources from which, as indicated above, foreign capital may after the war be expected to come, they then enumerate the questions which must be decided:—I. Is it desirable to legislate in the direction of forbidding the employment of foreign capital here in Joint Stock Companies unless some such provisions as the following are satisfied: (1) That there shall be disclosure of the alien character of the foreign owner; (2) that not more than a certain proportion of the company's shares shall be held by aliens; (3) that the Board, or a certain proportion of the Board, shall not be alien; and II. Is it desirable to discriminate between one alien and another, and to legislate in that direction in the case of certain aliens and not of others? In our answer to these questions we find it necessary to discriminate between different classes of companies, and we divide them into:—Class A.—Companies generally not being companies within classes B and C. Class B.—Companies owning British shipping; and Class C.—Companies engaged in "key" industries.

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THE MINING INDUSTRY OFFICIALLY REVIEWED.—IV.

Some Extracts from Annual Reports of Inspectors of Mines.

Extensive Underground Workings.—Owing to the rapid development of some of the older flat mines the distances from the nearest riding shaft to the furthest workings are becoming so great that it is somewhat of a task to make an extended inspection. It is certain that the health of persons must suffer after a few months of the excessive strain of walking up a long incline in an indifferent atmosphere, and I consider that mechanical transport should be provided to help underground workers where distances to be travelled exceed a limit to be laid down by the medical authorities. Regulation 153 (25) provides for hoisting of men where the height ascended exceeds 500 feet, measured vertically, but this does not help matters when the dip is in the neighbourhood of four or five degrees only. The distance from the nearest travelling shaft to the bottom of the South Incline at Brakpan, which has a dip of six degrees is now very close on 6,000 feet. In this case the limit of 500 feet vertical is slightly excused and the matter is having attention. On the present layout of shafts on this mine the distance of the future workings from the nearest travelling shaft will cause trouble, and some scheme should be at once initiated to deal with the question.

Rectangular Shafts (New Pattern).—On the new leased areas I am informed that rectangular shafts of much wider dimensions than the hitherto accepted patterns are to be sunk, which will have fewer compartments, but which by reason of the increased width will be able to deal with heavier tonnage, and at the same time will facilitate the handling of long timbers and drills. The only point which I do not favour in this new type of shaft is the additional length of the dividers which will automatically increase the vibration of the guides and perhaps lead to serious accidents. Naturally the defect can be balanced by heavier timbers and theoretically this should meet the difficulty, but in the absence of actual demonstration the doubt remains.

Fire Damp.—At the Daggafontein Mine in the South Drive, which is rising slightly from the Main Connection Incline, fire damp was encountered in a fissure. Water was simultaneously struck from the same source, which filled the mine. The water has not as yet been pumped out owing to the absence of proper pumps and columns, and in consequence nothing is known of the amount of gas at present. Safety lamps are available and will be used when the water is reduced to danger level. This is the second occasion on which fire damp has been encountered in this mine, the only other mine in the district having a similar experience being Brakpan. These experiences are most disconcerting and dangerous in the extreme, as in gold mines on these fields this gas is the last thing one would expect. The first occurrence resulted in the death of a white man.

Rainfall.—The abnormal rainfall along the Reef during the latter part of the year has affected the industry to an extent which is not properly realized. The mines on the Kleinfontein and Modderfontein valleys, as well as the Ginsberg, have all suffered and are still suffering serious loss and inconvenience through the influx of water to underground workings. It is not down the shaft or outcrop slopes that the water has entered, but through cracks on the surface caused by minor subsidences, which have in most cases been induced by the rains in the past, and also during the present season. In addition to this the rains in other parts of the Union, especially in Natal, have rendered transport of mining poles from plantations to railhead an impossibility, and the position at the present time in regard to timber is extremely serious.

Systematic Roof Support.—Although roof support at the present day has reached a pitch of completeness, induced by painful experience, systematic support, at regular intervals, in the strict meaning of the term, has been carried out only on the Modderfontein Deeps for some time past. I may be unduly optimistic in the matter, but I consider that the low accident-rate on this mine can be fairly attributed to systematic support which has held the mine steady and prevented accidents not only from falls of rock but from numerous other causes which are induced by a shaky mine.

Earth Shocks.—There has been a decrease of shocks during the year, due no doubt to increased sand filling, and also, I regret to say, to increased unpayability on the East Rand Proprietary Mines, which has resulted in large blocks of ground being left standing. Shocks have in the past all occurred in the neighbourhood of the East

Rand Proprietary Mines, although they have been felt in a minor degree further west. On the far east mines there have been no shocks so far, and there can be no doubt that the reason for this lies in the soft footwall found in all far east mines. This undoubtedly acts as a cushion which effectually prevents any sudden crushing of pillars, which in turn is the direct cause of earth shocks. For the same reason I do not expect to have air blasts or rock bursts on the mines east of the Blue Sky.

Flaking.—At the Government Gold Mining Areas the sudden and violent flaking off of small pieces from the face has resulted in several minor accidents. To protect the natives working near the face canvas screens have now been provided, which are placed between the natives and the face. Although pressure has a good deal to do with this flaking, I consider that a great deal is due to reduction of rock temperature, through ventilation.

Green Dyke.—In the Springs area all shafts so far sunk have encountered what is called the "swelling" or "Green Dyke," which is really a contemporaneous flow on the horizon of the upper dolomites. In composition it is anophitic dolerite. The peculiarity of this rock is that it swells on exposure and crumbles in a similar manner to kimberlite. The effect on shaft timbers has in some cases been disastrous, the ordinary timber or steel setts being quite inadequate to withstand the pressure.

KRUGERSDORP INSPECTORATE, TRANSVAAL (M. FERGUSSON).

Labour.—Skilled white labour is getting more scarce in this district as the mines open up on the East Rand, and great difficulty is experienced in getting good timbermen, especially for shaft work. Native labour has been scarce throughout the year. There have been numerous small disputes on the mines between the employees and the management, most of them too trivial to call for further reference. The management are generally quite willing to meet any individual miner or body of miners and redress a real grievance, but direct dealing of this nature does not commend itself to the unions, which prefer to keep a firm hold on the men and discourage the formation of local workmen's committees by every means in their power.

Health of Workmen.—Health conditions have been normal. There have been no serious epidemics affecting mine employees. Unrelaxed efforts for the reduction of the amount of dust to which employees are exposed continue to be made by the mines. Dust tests in every mine continue to be carried out by officials of the Chamber of Mines with the result that the need for observing the greatest precautions is kept constantly before all parties concerned. Water services have undergone improvement where experience has revealed a defect, and water-fed drills have been introduced to a greater extent and are used as much as possible in places where dust is most likely to be created. There is to-day no excuse for any workman to work or be in an atmosphere which is dangerous to the health. The question of ventilation of mine workings has also received increased attention and in the layout of new workings there is a marked tendency to give this matter proper consideration. The amount of night-shift work now performed is almost negligible.

Progress of Work.—No new mines have been opened. On the contrary several small concerns which managed to make a little headway last year have been forced to close down. The larger mines have continued to carry on operations, but the increased costs due to the war are gradually reducing the small margin between profit and loss on many of these low-grade properties, so that in spite of economies and improvements it appears that some of them will be forced to give up the struggle and cease operations during the coming year. The shortage of native labour and the threatened further curtailment of glycerine for the manufacture of explosives add to the difficulties.

Diamonds.—The alluvial diamond diggings in the south-western Transvaal continue to attract a great deal of attention. Fresh patches of diamondiferous gravel have been discovered and the number of diggings grows accordingly.

Lime.—Agricultural lime is obtained from surface deposits at Ventersdorp and Lucerne near Zeerust. The cement works of the Pretoria Portland Cement Company, at Slurry, near Ottoshoop, maintain a large output.

(To be continued.)

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THE WEEK IN THE SHAREMARKET.

Good War News—Improved Prices Not Maintained—Rise in Africans, Solitary Exception.

On Friday afternoon last Lace Props advanced from the morning's price of 13s. 1d. to 14s. Saturday's call brought only a limited amount of business with generally a lower tendency. The last bogey that has been set up is the Spanish influenza. If it is the same malady that has recently visited the western war front, no alarm need be entertained. A trusted correspondent recently wrote that its duration was short. Two days of headache and backache, two more days of prostration, and return to work on the fifth day. Out of fifteen hundred men in one detachment that were ill, none died. The market was again dull on Monday morning; in short, a repetition of Saturday's performance with no features of interest. The expectation of good business on Tuesday morning was not realised, for neither business nor prices improved, with the one exception of a trifling turn for the better in Modder Easts and their options. This shows how purely professional is the market. One leading broker consoled himself with the remark, that it was a comfort to know that at any rate one could get one's money back for yesterday's purchases. The same state of affairs continued all day. At the opening on Wednesday African Farms advanced from the closing price of 15s. 10d. to 16s. 9d. and Government Areas to 92s. 6d. These two maintained their position at the call; otherwise there were no changes in price, except for a fall in Lace Props which have now lost the whole of the recent gains which carried them to 14s. More good news and consequently a further falling off on Thursday morning. A few stocks unchanged, but the majority weaker. African Farms alone were in good demand and a parcel of 2,000 changed hands in one line at the advanced rate. Charters (B.S.A.) at last produced a sale at 16s. 6d. The outside dealings for the week were very small. Sales: Union Tins, 5s. 3d.; Monteleos, 24s. 6d.; Phoenix, 11d.; Sakalavas, 10s. Buyers and sellers: Makganyene Diamonds, 32s. 6d.—35s.; Mauss Syndicate, 25s., buyer; Union Micas, 9s.—10s.; Lydenburg Lands, 5s. 1d., buyer.

On Thursday African Farms closed at 17s. 10d.; otherwise prices were inclined to be lower. At the opening on Friday the only business transacted was in African Farms, with sales at 17s. 10d., 17s. 9d. and 17s. 8d. At the call they fell to 17s. 5d. With the exception of a sale of 2,000 Geduld Props at 37s., there was no activity and prices were generally marked down, as will be seen by the record of sales. African Farms, 17s. 5d.; Hume Pipes, 35s.; Leeuwpoots, 32s. 6d.; Lydenburg Farms, 9s. 4d. and 9s. 5d.; Modder Bs., £8 8s.; Modder Deeps, £7 8s. 9d.; Modder Easts, 21s. 4½d.; Kleinfonteins, 14s. 6d.; Nourse Mines, 18s. 6d.; New State Areas, 20s. 7½d.; Princess, 3s. 8d.; Rooibergs, 11s. 6d.; Southern Van Ryns, 14s. 6d.; T.G.M. Estates, 21s.; West Springs, 25s. 9d.; Wit. Deeps, 9s. 9d.; Zaaiplaats, 17s.; Alkalis, 45s. This last represents a substantial advance on last quotations.

	Fri., 27th.	Sat., 28th.	Mon., 30th.	Tues., 1st.	Wed., 2nd.	Thurs., 3rd.
African Farms . . .	15 3*	15 9*	15 9*	15 8*	16 9	17 4
Anglo-Amer. Corp. . .	31 6	31 3	—	31 0*	—	—
Apex Mines . . .	7 6*	7 6	7 3*	7 4*	7 4*	7 3*
Aurora Wests . . .	9 0*	—	9 0*	9 0*	9 0*	9 0*
Bantjes Consolidated . .	3 1*	3 3*	3 2*	3 3*	3 4*	3 4*
Brakpan Mines . . .	75 6*	75 6*	75 6*	75 6*	75 0*	75 0*
Breyten Collieries . .	10 0*	—	10 0*	10 0*	10 0*	10 0*
Brick & Potteries . .	3 9*	3 9*	—	3 9*	3 9*	3 9*
British S. Africa . .	16 6†	—	—	—	—	16 6
Bushveld Tins . . .	0 7*	0 7*	0 8*	0 7*	0 8*	0 8*
Cassel Coals . . .	—	—	—	29 0†	—	—
Cinderella Cons. . .	4 6†	—	—	4 0*	4 0*	4 6†
City and Suburbans . .	9 3†	8 6*	8 3*	9 0†	8 6*	8 6*
City Deeps . . .	53 0†	52 6*	52 6	52 6*	52 9*	52 6*
Cloverfield Mines . .	9 3*	—	9 6†	—	9 6†	9 6†
Clydesdale Collieries . .	18 0*	18 6*	18 6*	18 0*	18 0*	18 0*
Concrete Construc. . .	6 0†	6 0†	5 3*	6 0†	—	6 0†
Con. Investments . . .	19 6*	19 0*	19 0*	19 0*	19 6*	19 6*
Con. Langlaagtes . .	20 0†	18 9*	18 6*	19 6	19 0*	20 0*
Con. Main Reefs . . .	11 3*	11 6*	11 6*	11 9*	11 9	11 9*
Con. Mines Selec. . .	26 0*	26 0	25 9*	25 9*	25 9*	25 9*
Coronation Collieries . .	43 0*	43 0*	43 0*	42 6*	—	43 0*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 27th.	Sat., 28th.	Mon., 30th.	Tues., 1st.	Wed., 2nd.	Thurs., 3rd.
Coronation Syndicates . .	—	—	—	2 0†	2 0†	2 0†
Crown Diamonds . . .	5 0†	5 0*	—	5 3*	5 3*	5 6*
Crown Mines . . .	40 0*	40 0*	—	40 0*	40 0*	—
Crown Mines Deb. . .	£100*	—	£100*	£100*	£100*	£100*
Daggafontein Mines . .	23 6*	23 9*	23 9*	24 6†	23 9*	—
Do. Options . . .	4 9*	4 3*	4 3	4 6*	4 6	—
Durban Road . . .	10 0*	—	—	—	—	—
Durban Road. Deeps . .	7 3*	7 6*	7 6*	7 6*	7 6*	7 6*
East Rand Coals . . .	2 2	—	2 4*	2 2†	2 3	2 1*
East Rand Deeps . . .	0 11*	0 11*	1 0	0 11*	0 11*	—
E.R. Minings . . .	18 0†	18 0†	18 0†	18 0†	18 0	16 6*
East Rand Props. . .	—	4 9	4 6*	4 6*	—	—
East Rand Deb. . .	£63½*	£63*	£63*	£63*	£63*	£63*
Eastern Golds . . .	1 3*	1 3*	1 3*	1 3*	1 3	1 3*
Ferreira Deeps . . .	—	—	9 0*	—	—	—
F. Smith Diamonds . .	3 3*	3 3*	3 3*	3 4	3 6†	3 5*
Geduld Props. . .	37 3	37 0*	37 3	37 0†	37 0	37 0
Glencairns . . .	2 0†	—	1 6*	—	—	2 0†
Glencoe Collieries . .	6 0†	6 0†	—	—	—	—
Glynn's Lydenburgs . .	25 0†	25 0†	23 0*	23 6*	23 6*	23 3*
Government Areas . .	91 0	91 3*	91 0	91 3	92 7½	92 3
Jhb. Bd. of Executors . .	30 0*	—	30 0*	30 0*	—	—
Jupiters . . .	4 0*	4 0*	4 9†	4 3*	4 6*	4 6
Klerksdorp Props. . .	3 0*	3 0*	3 0*	3 0*	3 0*	3 0A
Knight Centrals . . .	4 3*	4 6	4 3*	4 3*	4 3*	4 3*
Knights Deeps . . .	7 0†	7 0†	—	—	—	—
Lace Props. . .	13 1	13 11	13 10†	13 6	13 0	12 9
Leeuwpoot Tins . . .	36 0*	36 3	36 0*	35 0A	34 6	33 9*
Lydenburg Farms . . .	9 3*	9 3*	9 3*	9 4	9 4*	9 4*
Main Reef Wests . . .	2 10	2 6*	—	—	—	2 9†
Meyer & Charltons . .	90 0†	86 0*	90 0†	90 0†	86 6*	88 6*
Middelvie Est. . .	1 3	—	1 6†	—	1 6†	1 0†
Modder B's . . .	167 6	167 0*	169 0†	166 0*	168 0*	168 0
Modder Deep . . .	148 6	147 0*	147 0	147 0*	147 0*	148 0
Modder Easts . . .	21 7½	21 7½	21 6*	22 0	22 3	21 6*
Do. Options (3 yrs.) . .	6 8	6 7	6 7*	6 10	6 10*	6 7*
Do. Options (4 yrs.) . .	7 11	7 10	7 9*	7 11*	7 10*	7 8
Hume Pipes . . .	34 6*	33 6*	33 6*	34 0	34 3	34 6*
Langlaagte Est. . .	—	—	—	—	20 0†	—
Natal Navig. Col. . .	19 0*	19 0*	—	19 0*	—	—
National Banks . . .	£14*	£14*	£14*	£14*	£14*	—
New Boksburgs . . .	—	1 0*	—	—	1 0	—
New Eland Diam. . .	24 0*	23 6*	22 6*	23 6*	23 6*	23 6*
New Era Cons. . .	10 0*	10 0*	10 0*	10 0*	10 0*	10 3*
New Geduld Deeps . .	5 9*	5 9*	5 10	5 9*	5 11	5 9*
New Heriots . . .	12 6*	12 6*	13 0*	13 0*	13 0*	—
New Kleinfonteins . .	14 9*	14 9	14 9	14 9	14 6*	14 3*
New Modder . . .	—	£27A	—	£27	£27½	£27A
New Unifeds . . .	—	5 6*	—	—	—	5 6*
Nigels . . .	4 6*	4 0*	4 6*	4 6*	4 6*	4 6*
Nourse Mines . . .	18 0	18 0*	18 0*	18 0*	19 0†	—
Pretoria Cements . .	72 6A	73 6†	73 0	72 0*	72 0*	72 0*
Princess Estates . . .	3 6*	3 6*	3 6	3 6*	3 6*	3 6*
Rand Collieries . . .	3 9†	3 6†	2 6*	2 6*	3 6†	2 6*
Rand Klips . . .	10 6*	10 3*	10 3*	10 0*	10 6*	10 3*
Rand Nucleus . . .	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Rand Select. Corp. . .	87 0*	87 0*	87 0*	87 0*	87 6*	87 0*
Randfontein Deeps . .	4 3*	4 3*	4 4*	4 6*	4 6*	4 6*
Randfontein Est. . .	14 0*	14 0*	14 6*	15 0	14 9*	15 0*
Roberts Victors . . .	6 0*	—	—	—	—	—
Rooibergs . . .	10 9*	10 9*	10 9*	11 0*	11 3*	—
Rooipoort Uniteds . .	—	3 0*	—	—	2 9*	2 9*
Ryan Nigels . . .	2 9*	—	—	—	2 9*	3 0*
Shebas . . .	—	—	—	1 0†	1 0†	1 0†
Simmer & Jacks . . .	6 6†	—	—	—	—	—
Simmer Deeps . . .	—	1 9*	1 6*	2 0†	1 6*	—
S.A. Breweries . . .	30 0*	30 0*	31 0*	32 0*	32 6*	33 0*
S.A. Lands . . .	6 7*	6 6*	6 7	6 7	6 7*	6 9
Springs Mines . . .	72 9	72 0	71 9*	71 9*	71 9	71 6
Sub Nigels . . .	27 9	27 6*	27 6*	27 6*	27 7½	28 0
Swaziland Tins . . .	33 0†	30 0*	30 0*	—	31 0	—
Transvaal Lands . .	20 0*	21 0*	21 0*	21 0*	21 0*	21 0*
Trans. G.M. Est. . .	—	17 0†	17 0†	17 0†	16 0†	—
Van Ryn Deeps . . .	71 3	71 9*	71 6*	71 9*	71 6*	71 6
Village Deeps . . .	15 0*	15 0*	15 6*	15 9*	16 0*	16 0*
Village Main Reefs . .	10 0*	10 0*	10 0*	—	10 0*	10 0*
Western Rand Est. . .	2 3*	—	2 3*	2 3*	—	—
Witbank Collieries . .	—	—	50 0*	50 0*	—	—
Wit Deeps . . .	8 10	9 0*	9 0*	9 6	9 6*	9 6*
Wolhuters . . .	3 6*	3 9†	3 8*	3 7*	3 8*	4 0†
Zaaiplaats Tins . . .	17 0	17 0*	17 3	17 4	17 3*	17 2*
Union 5 per cent. . .	£105	£105*	£105*	£105*	£105*	£105*
New States . . .	20 6	20 9	20 9	20 9	20 9*	20 6*
S. Van Ryn . . .	14 6	14 3	14 3	14 3	14 6	14 3*
Do. Options . . .	—	1 3*	1 3*	—	1 4	1 3*
S.A. Alkali . . .	40 0	40 0†	37 6*	37 6*	40 0	37 6*
West Springs . . .	26 4†	26 3	26 0	26 0	26 0	25 6
Do. Options . . .	11 9*	11 3*	11 3	11 0*	11 3*	11 0
Standard Bank . . .	—	£83*	—	—	—	—
De Beers . . .	—	—	—	£16*	£16*	£16*

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Bulgarian Surrender—Various Opinions—Private Limited Companies—Timber and Bricks—Paints, Oils and Colours—Pretoria Pig Iron.

THE Bulgarian surrender has caused an uncertain feeling in the commercial circles of Johannesburg and the Rand generally. In going the rounds one could not get away from that topic of conversation, which is summarised as follows: A representative from a mining group stated that they would not purchase much now until it was seen what future developments were likely to take place, as anything might happen during the next few weeks. The next individual remarked that business was very quiet on account of the excellent war news, as people holding stocks were getting a bit nervous, which to his mind was a great mistake. A manager of a large firm said that he thought that speculative holders and others who had hoarded stocks would cut prices cautiously to sell the bulk of their holdings, as he already had a case in point, in support of that theory. A broker said that the market was not so good as it should be, owing to the Bulgarian business, and another remarked that the mines are not buying and the town business is exceptionally quiet, and even was so on the Commercial Exchange for the first few days of the month when things are usually better, but it was not so on this occasion—what the reason was he was quite at a loss to say. A merchant said there was nothing in this nervous talk, although he thought when peace really came that a 25 per cent. reduction would take place in many lines, as the war risks and extra freight roughly represented a shilling in the pound; in some cases that was quite an undue proportion, especially on the heavier lines. In reply to a message over the 'phone, a buyer said that he would rather buy small quantities than run the risk of buying stock to put away on the shelves. Another pertinent remark over a quotation was that a certain party must have a guilty conscience for having charged too much in the past. The manager of a very responsible firm said that he only had an average stock, if anything rather below than above normal. But he would like to replenish it at the last rates, but every time he sent to America the price of his goods always seemed to unduly rise, therefore he had decided to sell what they had in the ordinary way and keep alive to the world's position and replenish when practicable. A visit was paid to the Central Buying Office, where it was gathered that as the reserve stocks on the mines were good, they would keep on much as usual, but the idea seemed to be that these reserves would not be increased. It was similar to the case, as the previous 'phone message remarked—rather buy small quantities to

run along with and chance the risk of future prices. During these enquiries a responsible party stated that his idea was that when any setback came, the first to feel the shock would be the second-hand mining material bought at the extra high prices.

PRIVATE LIMITED LIABILITY COMPANIES.

Quite a mild sensation was created by the publication in the *S.A. Mining Journal* last week of the list of companies registered in July, 1918, to find that the whole lot—22 in all—with capitals ranging from £100 to £50,000, were private companies. The first criticism came from a shrewd merchant, who said that he was getting careful about dealing with private companies, and in some cases where their capital was small he asked the principal to sign in his private capacity, in addition to that for the company. Another gentleman who is managing director of a representative public company, says that he will have to look into the subject of the general trading being controlled so much by private companies. He remembers the time in the early

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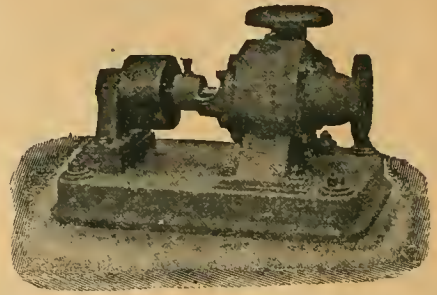
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days of the Rand when the place was flooded with prospecting syndicates, whose method was to pay their first account promptly, but afterwards many did not pay at all—hence drastic measures had to be taken by using extra caution in giving any of them credit. The limited liability law is an excellent thing, but the question is whether the recently adopted "private company" innovation has not gone to the other extreme of making everything "too private."

TIMBER, BRICKS, ETC.

Prices remain the same, and nothing is likely to go down, but rather likely to go up, as cables from Sweden state that rates for timber will advance about $\frac{1}{2}$ d. per foot for deals after the New Year. However, these cables came before the Bulgarian news, which has made merchants on this side hold their hands for the moment. It is anticipated that when the more favourable exchange and war insurance are arranged it would drop deals from 2d. to 3d. per foot, to say nothing of cheaper freight. Altogether, something like 6d. per foot decrease in deals will come about when normal times again prevail. The building trade is quieter and contracts are being held up for private houses, more particularly. The business quarters of the town still continue active, but it is questionable whether new works will be started just for the present, as there is a state of uncertainty. Bricks are in fair demand, and the kilns have nearly got abreast of orders on hand. Wire cut and pressed bricks are even slightly easier—for the first time this year. Cement seems to be scarcer than ever, as the brokers cannot quote for spot delivery. Lime of all kinds is plentiful. The brick and pipe works at Olifantsfontein has been seriously inter-

fered with through the Spanish influenza. In fact, several yards have been affected in Johannesburg, and one closed down altogether for the time being.

PAINTS, OILS, COLOURS AND GLASS.

According to a trade report for October, white lead is plentiful and the price is reduced to 1s. 3d. per lb. in 100 lb. kegs. Linseed oil of the raw kind has arrived, but boiled oil is scarce and in many places sold out for wholesale quantities. Turpentine is acutely scarce, but supplies are expected early in November. Brushware is now prohibited from leaving England, and therefore the purchase of same is recommended. British polished $\frac{1}{4}$ in. plate glass is exceedingly scarce and fresh supplies only arrive erratically, therefore no guarantee can be given as to delivery, but orders are treated strictly in rotation. Wallpapers are in excellent supply from 3s. 3d. to 21s. per roll. The trade report is much the same as the previous month.

THE PRETORIA PIG IRON.

The Pretoria pig iron is being shown in a prominent window in the Rand Club buildings, Commissioner Street. An expert was asked to give his opinion on it. He was quite enthusiastic over the matter. The grain of No. 3 iron is capital and the polishing is excellent. The white iron is also good, and on the whole he is pleasantly surprised that the exhibit looks so excellent, and he considered that the iron should work up very well indeed.

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BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. to 15s. O.M. gallon; white lead, 1s. 6d. per lb. and 1s. 3d. in big lots; turpentine, 110s. 2¼ 1-5 galls.; 10-1's; 5-6 imp. tins, 120s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ½in., 8s. 6d.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin quotations unobtainable; petrol, 39s. 2d. 2¼ I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 47s. 6d. per caso; cylinder, 37s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11b.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton;

nitrotharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, 100s. to 110s. 100 lb.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 190s.; tubing, 50s. to 65s. per 100ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ½in. and 3-16in. round iron, 95s. to 100s.; ½in. do., 85s.; ¾in. steel, round, 80s.; ½in. round iron, 75s.; do. steel, 72s. 6d.; ¾in. round iron, 72s. 6d.; do. steel, practically none in town; ¾in. round iron, 65s. to 67s. 6d.; ¾in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ½in. diameter, 2s. to 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 1s. 9d. lb.; ¾in. dia., 1s. 6d., 3½in. and up long 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb.; ½in. dia. and 2½in. up long, 75s. per 100lb.; ¾in. diameter up to 2½in. long, 85s. per 100lb.; ¾in. dia. 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 55s. 100 lb.; ½in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 45s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 3d. lb.; ¾in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s., 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

Mr. R. Goldman and Mr. H. A. Barsdorf have left on a tour of British East Africa and the adjacent lately occupied territories.

The Electricity and Industries Department of the City Council, Port Elizabeth, has issued an interesting and attractive illustrated publication under the title of "The Trade and Commerce of Port Elizabeth," which contains a great mass of statistical information and descriptive matter relating to the commercial and industrial activities and general development of that progressive centre and district, and should be in wide demand. An interesting survey of the Sundays River settlement is one of its features. A large number of admirably reproduced pictorial illustrations considerably enhance the attractiveness of the volume.

Extraction of Potash from Mine Dumps.

The "Mining and Engineering Record" (Vancouver) states that a new source of wealth production is the extraction of potash from mine dumps, and it might be well for operators to have analyses of their dumps made to ascertain their prospective value as a source of this mineral. Representatives of the United States Department of Mines, who have been investigating the dumps of the Colorado gold mines, report the Portland and Golden Cycle waste dumps contain 6,000,000 tons of sands carrying 7 per cent. to 10 per cent. potash. The "Daily Mining Record," of Denver, Colo., states that the Golden Cycle Dump is capable of producing 560,000,000 lb. potash worth 7 cents per lb., or 39,000,000 dollars. The company proposes to treat the dump and expects to realise for the shareholders 22,000,000 dollars to 39,000,000 dollars from what has been hitherto waste.

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CAUTION.

It having come to the knowledge of

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owners of the Patent for "**WILPACO**" **HYDRAULIC PACKING**, that a substitute for "**WILPACO**" is being placed on the Market and supplied to Mines as genuine "**WILPACO**" Packing, we desire to advise Engineers and Users of Hydraulic Packings that "**WILPACO**" Packing is in every case labelled with our Trade Mark "**WILPACO**," and is invoiced under that name and can be only obtained from our Sole Agents,

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Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—IV.

Lessons for South Africa—The Electrification of the Chicago, Milwaukee and St. Paul Railway.

THE following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E.:

THE new machines are also shunt wound with compensated windings. On actual test it has been found that a compensated machine will drop its voltage approximately 2 per cent. from no-load to full load without any series winding, which should be sufficient close regulation for ordinary railway work. A series winding is an objectionable feature in connection with regenerative operation. In addition to these features in the electrical design of the machine, barriers are provided in front of the commutator necks, on the brush holders, and between the commutator and out-board bearing, to minimise the effect of any arcs which might be established. A further precaution against flash over has been provided in the shape of specially high speed D.C. circuit breakers in the railway feeder circuits. These breakers are arranged to short-circuit a second breaker which is in series with a limiting resistance connected into each feeder circuit, so that the operation of the high tension circuit breaker will first reduce the short circuit current to a value that should prevent flashing before the circuit is finally interrupted. On page 203 of the *Journal*, Mr. Kirkland makes brief reference to the power indicating and limiting system originally installed. The operation is evidently dependent on current strengths, which will vary within appreciable limits by temperature changes affecting the line resistance, and with leakage. To overcome this difficulty in the new sub-station equipments briefly described, a system has been developed in which the measurements are based upon variations in frequency as the load comes off or on. It is difficult to describe in the short space available, but briefly consists of a small A.C. machine at each substation. Small wire circuits are provided between sub-station and sub-station, and the frequency indicator in the despatcher's office will register, say, an increase of two cycles for each 1,000 k.w. of demand. For limiting the load the system is arranged so that when the totalising meter at despatcher's office reaches the pre-determined value, it closes a contact which impresses a D.C. current on the circuit. This D.C. current actuates an instantaneous relay at each sub-station, whose contacts shunt a resistance connected in series with the inverse time limit relay controlling the field rheostats of the D.C. generators. This latter relay is thereby given an additional torque which causes it to close its contacts at a lower value of current in the main shunt than ordinarily. It results, therefore, that the relay in the most heavily loaded sub-station will operate first and produce a reduction in load before the other relays come into action. I should like to associate myself to a great extent with the author's recommendation of the Durban section as the most suitable section to select for a start in the general S.A.R. electrification, but for the moment will pass right on to page 208, where Mr. Kirkland states he does not wish to open up the old controversy, etc., and proceeds to announce that the single-phase system is dead, and the only possible solution is 3,000 volts D.C., or, in other words—for goodness sake don't let us have any battle of systems, there is, there can be, only one system—3,000 volt D.C., the latest and the best, with sub-stations every 30 miles! And what are the arguments that the single-phase system is dead beyond hope of resurrection? Because rotating sub-station machinery is necessary, because the cost of the locomotive is greater, and because regeneration of power is impossible. Let us for a moment examine in a strictly impartial way these arguments. Assuming that motor generator converting units would be necessary in any general railway electrification, both for phase and frequency requirements, then single-phase work is at least no worse off than D.C., with the very considerable advantage that

the conversion can take place in the Power House itself, with cheap transmission lines to the feeding points on the railway system. The cost of locomotives is alleged to be greater. Possibly for single-phase motors this may be the case, but in any event this is not such an important factor, as the cost of locomotives will ordinarily not average more than 14 to 20 per cent. of the total cost of a new line. With split-phase locomotives, which is after all a single-phase system, the cost of the locomotives may be even more favourable than D.C. because regenerative braking is impossible! Particulars of regenerative control for single-phase motors are obtainable in text books, and the Jeumont system was, I believe, applied to the Midi Railway with satisfactory results, test figures showing that, on a negative grade of 1.7 per cent., with a 280 ton train at 23.16 miles per hour, 400 k.w. at 0.83 power factor was returned to the line, corresponding to 40 per cent. of the power required by the same train ascending the gradient at the same speed. With split-phase equipments, regeneration is an altogether simpler matter than with D.C. operation, as has already been mentioned. It would appear therefore that the reasons given us for rushing to condemn every other system are open to very solid objections. Presumably the three-phase system is also committed to the same limbo, though not expressly so stated. Surely all this is very illogical, and the proper attitude to adopt is to preserve an impartial frame of mind, carefully weighing up the pros and cons of all successfully tried systems, with a strict regard to the case in immediate view and to its relations with the possibilities of the future. It behoves one to be very careful before dogmatizing in this way. Past history is interesting. In 1908 Mr. Alexandersen of the G.E. Co. stated: "In the series repulsion motor, the problems of commutation had been solved," and Mr. Steinmetz of the G.E. Co., commenting on this, stated: "It appears, therefore, that the second and last serious problem of the alternating current motor still remaining—the problem of commutation, has been solved by the work recorded. The alternating current single-phase motor is in practically as good shape as the D.C. motor, and the second period in the development of the A.C. motor is concluded," and I remember that at that time you could hardly hear yourself speak for the trumpeting of the merits of the Alexandersen motor. Later in 1908, in a discussion on the New Haven electrification, Mr. Steinmetz stated: "It is specially gratifying to see the statements which have been made by unbiased engineers, based upon theoretical considerations, have not been verified by practical experience, and that heavy railroad work can be handled by single-phase alternating current motors, though obviously not with the same high drawbar pull per ton of locomotive weight, and possibly, at least for the present, not with quite the same reliability of service. This, I believe, establishes the single-phase alternating current motor as one of the pieces of apparatus by which the future electrification of our country's railway system will be accomplished." In 1909, I believe the G.E. Co. withdrew all their single-phase equipments, and the answer to this is that, in 1911, the Swedish State Railways ordered from Siemens-Schuckert 13 2,000 h.p. freight, and 2 1,000 h.p. passenger locomotives for operating on a 15 cycle single-phase 15,000 volt system, for the very important 80 mile section between Kiruna and Riksgransen. The service called for 2,200 ton ore trains, up a 1 per cent. grade, and 62 miles per hour for the passenger traffic, perhaps at date the heaviest electric traction then contemplated. The Westinghouse Company have at the present time some 1,500 miles of single-phase railway line in constant operation, and within the last few months the New York, New Haven and Hartford Railroad have ordered what I believe to be the largest single-phase passenger locomotives in the world, each locomotive being equipped with



Fig. 3.
WESTINGHOUSE LOCOMOTIVE, CHICAGO, MILWAUKEE AND ST. PAUL RAILROAD.

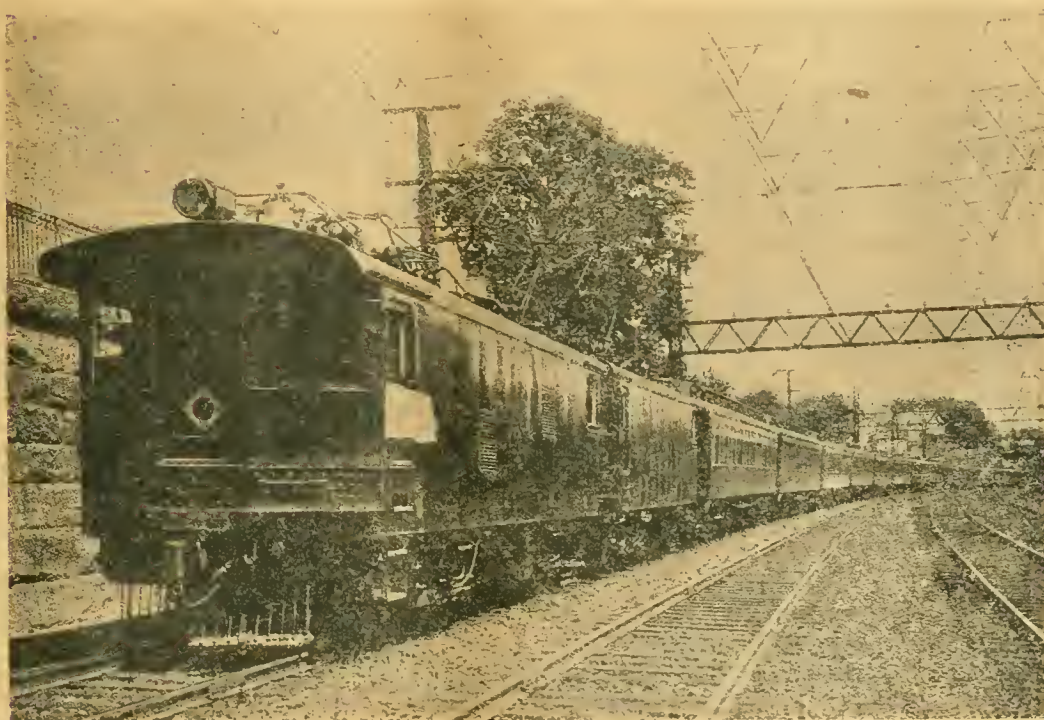


Fig. 4.
DOUBLE HEADING ELECTRIC LOCOMOTIVE IN PASSENGER SERVICE, 15 CAR TRAIN,
NEW YORK, NEW HAVEN AND HARTFORD RAILROAD.



Fig. 5.
110-TON BALDWIN-WESTINGHOUSE LOCOMOTIVE IN TRUNK LINE FREIGHT SERVICE.
NEW YORK, NEW HAVEN AND HARTFORD RAILROAD.

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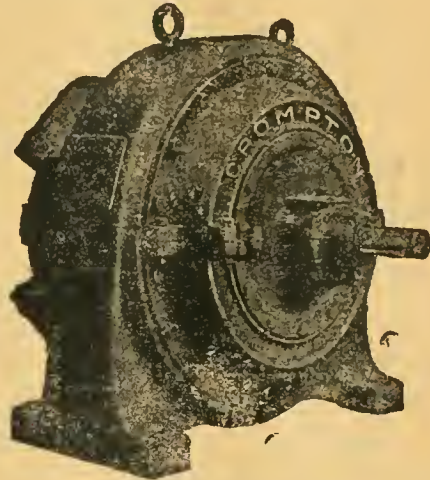
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12 motors, divided into groups of four, and arranged for multiple control. The locomotives are of the 2-6-2-2-6-2 single cab-articulated class. They weigh approximately 180 tons and develop a tractive effort of 47,500 lbs. Despite the size of these locomotives, the service requirements are so heavy that it is expected trains will be operated double headed. The locomotives are designed to operate both on the 11,000 volt single-phase system, and also on 600 volt D.C. when necessary. The attitude of the Westinghouse Companies has always been one of the open mind. They have never waged a war of systems, but only defended any particular system when attacked. They have never said dogmatically, this is best, or that is bad, but have recommended a particular system after a profound study of the actual requirements, with the result that to-day they have completely satisfactory and economically successful railroads operating on single-phase, split-phase, three-phase and 1,500 volt D.C. systems. They are experimenting, and with most encouraging results, at the present time, with 5,000 volt D.C. in combination with static rectifiers, and as already mentioned, are supplying 3,000 volt D.C. locomotives with regenerative control and sub-station equipments, in connection with the very important extensions of the Chicago, Milwaukee and St. Paul railroad referred to in Mr. Kirkland's paper. A day may come when, with the progress of the art, one system will establish itself to the acknowledged exclusion of all others; it may be that the static or mercury rectifier further developed is the key to the problem, carried on the locomotive itself. I say carried on the locomotive itself, because trolley line voltages of 3,000 to 5,000 cannot be the final solution, even with static sub-stations. One has to legislate for the future. Universal electrification of railways has to come, if only from the

point of view of conservation of available sources of energy. With steam locomotives, one has to carry fuel to burn fuel. Some figures given by Professor Goss of the United States Geological Survey Department, in November, 1909, are striking:—

Coal.	Tons.	Per cent.
Locomotive coal used in 1906 ...	90,000,000	100
Lost through heat in gases ...	10,080,000	11.2
Lost through cinders and sparks ...	8,640,000	9.6
Lost through radiation and leakage ...	5,040,000	5.6
Lost through unconsumed coal and ashes ...	2,880,000	3.2
Lost through incomplete combustion of gases ...	720,000	0.8
Used in starting fires, keeping hot and standing at sidings ...	18,000,000	20.0
Total losses and waste ...	45,360,000	50.4
Used for hauling trains ...	44,640	49.6

This 90,000,000 tons in 1906 was 20 per cent. of the total coal production of the country, and it is further to be remembered that, thanks to the inefficiency of the method of burning, the evaporation obtained from this coal would be of the order of 4 to 6 lbs. only. The steam locomotive, incidentally one of the marvels of modern engineering, travels with its power house on its back, and is handicapped accordingly. In progress of time, it will surely disappear. Its final disappearance will be greatly accelerated by the immense awakening to the necessity for economical reform, which is the unmixed blessing this calamitous war has brought in its train.

(To be continued.)

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Rhodesian Section.

RHODESIAN MINERAL OUTPUT FOR AUGUST.

We have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of August, 1918, with comparisons and values:—

MATABELELAND.

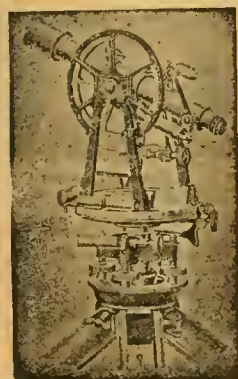
	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
BULAWAYO DISTRICT.				
Abercorn (W. J. Lane)	5	350	263.61	1093
A.D.C. (Lochade Synd.)	5	689	64.76	268
Addie Iris (H. A. D. Tansley) ...	2	38	27.52	114
Algoa 2 (M. T. McEwen)	5	492	33.74	140
Alliance (R. J. Howe)	2	180	21.33	88
Annasona (Rhodesia, Ltd.)	3 1P	292	202.90	841
Do. (sands)	—	436	152.33	632
Antelope G.M. (Rhod.) Co. ... 2BM 1T 8P	3725	874.92	3711	
Do. (sands)	—	3427	844.48	3582
Big Ben South (W. E. Hunt) ...	2	80	40.05	166
Bill's Luck (W. Arbery)	5	900	103.13	428
Bothal (W. H. Robinson)	5	204	29.08	121
Bushlick Mines, Ltd.	8N 3T	6052		
Do. (sands)	—	3780	1314.39	5453
Do. (slimes)	—	1909		
Do. (concentrates)	—	363		
Camp (Carson Mines, Ltd.)	5 1P	784	177.21	735
Do. (sands)	—	460	35.53	147
Cam Stick (Iron Duke Synd. No. 2) ...	3	200	93.02	386
Celtic (Trans. & Rhod. Estates) ... (10) (2P)	600	120.00	497	
Do. (sands)	—	600	60.00	249
Confidence (A. D. Hall), July ...	5	365	85.26	353
Cornwallis (E. Frankis)	3	5	8.83	37
Dorivac (D. De Villiers)	2	6	2.02	8
Donove A (W. K. Early), July ...	5	25	31.87	132
Durban (Durban Synd.)	5	386	242.51	1005
Do. (sands)	—	290	88.15	366
Eagle 2 (E. Sutherland), pannings	—	—	3.54	15
Eagle Hawk (T. Berwitz)	5	160	30.92	128
Fred (Trans. & Rhod. Estates, Ltd.) ... 10 2P	1600	936.34	3881	
Do. (sands)	—	1600	176.74	733
Germania (A. G. Hadingham) ... 2N 2P	595	409.18	1696	
Grange (C. Gordon)	5	140	47.50	197
Horn (Horn Reef Synd.)	5 1P	456	182.55	757
Do. (sands)	—	330		
Jessie (Jessie Tributors)	10 2P	1097	380.76	1578
Do. (sands)	—	542	35.13	146
Jumpers (J. P. McCay)	5	336	75.97	315
Do. (sands)	—	224	33.40	138
Lonely Reef G.M. Co., Ltd.	20 3T	5000	1713.04	7101
Mali (E. C. Smythe)	3	279	75.43	313
Mamba (Johnson & Fletcher, and G. W. Wood), clean up	—	—	3.11	13
Marlish (C. A. Abbot)	2	86	15.05	62
Matabele Queen's Co., Ltd.	10 2P	1300	529.83	2196
Do. (sands)	—	1000	50.35	209
Moreton Pinkney (J. Robinson) ...	2	75	24.89	103
Napoo (H. Ashburner), July ...	3	35	9.69	40
New Eclipse (J. R. Stewart)	5 1T	1056	539.16	2235
Do. (sands)	—	640	31.94	132
Newtonfontein (A. H. Newton) ...	3	420	338.53	1403
Do. (sands)	—	200	59.59	247

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Pannings (H. W. Durrell)	—	—	9.45	39
Peach A (Peach Synd.)	5	240	103.18	428
Petrol (E. Warren)	(5)	225	24.91	103
Prince Olaf (K. Johnsen)	5	324	198.69	824
Red Boy (H. Lunnun)	5	180	49.04	203
Red Rose (F. C. Barrett)	5	370	288.66	1197
Rewi (Intabanenda Synd.)	5	305	120.04	498
Ringstead (Ringstead Synd.)	5	35	8.35	34
Sabi (Fletcher & Williamson)	20	1800	221.18	917
Do. (sands)	—	940	130.72	542
Star (Eastern Queen)	5	350	32.56	135
Do. (sands)	—	202	28.81	119
Stock's Luck, sands	—	450	30.01	162
Tartan (G. Leach)	5	70	47.53	197
Wainui (Moll & Co.)	3	100	43.22	179
Wit Boy (Wit Boy Synd.)	5	472	17.43	72

Bulawayo District Total ... 14,780.76 61,441

GWELLO DISTRICT.

Acacia (W. & G. Hogg)	2	220	159.85	663
All British (H. J. Lea)	(5)	80	47.13	195
Do. (sands)	—	40	11.47	48
Babs (Beach & Boby), June, sands	—	352	59.90	248
Do. July, sands	—	268	57.80	240
Do. August, sands	H	320	141.74	588
Do. August, sands	—	341	73.28	304
Bonsor B 327 (C. Brunton), clean up	—	—	31.00	128
Chicago 1 (A. Fraser)	3	195	46.36	192
Chimborazo (Wonderland Trib. Syn.)	51P	483	162.70	674
Do. (sands)	—	348	77.62	322
Climax (G. Gilbert), May	2	40	9.92	41
Commonage (H. W. Gray)	1T	232	34.11	141
Connemara (Connemara Synd.) ...	20	2411	83.76	347
Do. (sands)	—	1685	782.99	3246
Do. (slimes)	—	726	137.70	571
Conqueror (Leppington & McConkey)	5	200	123.87	514
Csardas (Wolfshall Synd.)	10	480	155.47	644
Dunga (Wonderland Trib. Synd.)	5 1P	161	57.29	237
Dream (Mashona Synd.), July ...	(3)	200	150.45	624
Do. August	3	176	58.36	242
Falcon Mines, Ltd., with adjust.	27N 2T	16041	3694.87	15518
(Copper and Silver values not given.)				
Fed Up (A. Malcolm)	5	110	131.13	544
Gaika G.M. Co., Ltd.	5 1C 1T	3270	652.38	2773
Do. (sands)	—	3998	566.37	2402
Glen Arroch (Glen Arroch Synd.)	5	150	95.80	397
Globe & Phoenix G.M. Co., Ltd.	40 12P	6758	6416.71	26950
Do. (sands)	—	10017	1832.27	7696
Do. (slimes)	—	2457	552.09	2319
Gothic (Murray & Kennedy)	10 1P	400	98.20	407
Do. (sands)	—	286	21.21	88
Loyalist (B. Bertoldi), sands	—	470	52.56	218
Nevada G (F. C. Luxat)	H	920	86.22	357
Do. (sands)	—	540	20.71	86
Robin Hood (Gaika G.M. Co., Ltd.)	1C 1T	154	133.84	562
Roseate (W. J. Wright)	2	53	12.91	51
Royalist (J. Austen)	5	690	186.62	774



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	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Rutland (H. K. Havnar)	2	107	46-93	195
Sharkey R. (proceeds of Copper Plate) ...	—	—	2-36	10
Sheba B (C. Brunton), clean up ...	—	—	3-83	16
Second Trial (J. Rainsford)	2	12	2-95	12
Smith's Pocket (R. C. Smith), sands ...	—	275	10-70	44
Snark (J. G. Walter)	5	111	12-41	51
Tebekwe (A. N. Tyrell), sands ...	—	1200	64-72	268
Trixie B (S. Leven)	5 1P	400	99-66	413
Veracity (L. R. Evans)	5	600	121-79	505
Do. (sands)	—	600	38-22	158
Walrus (J. Jones), July	5	300	59-68	247
Wanderer (Selukwe) G.M., Ltd. ...	4GR	15200	1136-22	4710
Zabonkwe (Holmes & Urquhart) ...	5	800		
Do. (sands)	—	-580	164-31	681
Do. (slimes)	—	220		

Gwelo District Total 18,779-74 78,661

MASHONALAND.

HARTLEY DISTRICT.

Acorn (Anzac Synd.)	5	436	147-30	611
Do. (sands)	—	336	70-53	292
Axe (J. Davidson)	3	54	14-26	59
Cam & Motor G.M. Co., Ltd. ...	RP	11773	3782-46	16080
Chadshunt (C. H. Wheildon), July and August	5	440	382-27	1585
Do. (sands)	—	240	45-02	186
Cissy (J. E. F. Poulton), July ...	(2)	235	54-88	228
Do. August	2	198	42-55	176
Dalney 1 W (Macdonald & Sale), July and August, slimes	—	1200	110-26	457
Eiffel Blue (Willoughby's Con. Co. Ltd.)	10	1364	479-74	1989
Do. (sands)	—	720	33-20	138
Do. (Tailings, Ltd.), slimes	—	1301	66-85	285
Glasgow Mines, Ltd.	5	430	137-17	596
Do. (sands)	—	260	35-80	148
Golden Valley (John Mack & Co.)	10 1P	1185	383-82	1591
Do. (sands)	—	560	99-61	413
Do. (slimes)	—	810	109-71	454
Heroine (A. E. Ward)	5	250	183-51	760
Do. (sands)	—	330	67-29	279
Hope (Alexandra Synd. No. 2) ...	5	380	91-87	381
Do. (sands)	—	350	36-94	153
Just in Time (C. Somerset)	2	281	55-63	234
Kanyemba (Kanyemba Synd.) ...	10	620	203-90	845
Do. (sands)	—	460	77-79	323
Kelvin (Westoc Synd.), sands ...	—	250	38-00	158
Lily 1 (J. Baines), July	(2)	82	27-45	114
Do. August	2	104	26-25	109
Lion (J. Baker)	2	128	48-36	200
Makarata (J. Young)	(2)	10	8-77	46
Mali (J. Thornett)	3	621	51-09	212
Mountain Dew (A. & J. Milne) ...	10	550	112-96	468
Owl (A. Rolfe)	10	961	237-78	986
Do. (sands)	—	913	142-62	591
Pomposo (J. Knott), July & Aug.	2N	305	26-85	111
Revie (Ambrose & Aitken)	5	770	106-40	441
Do. (sands)	—	577	34-13	142
Rouge (Dreadnought Synd.), slimes	—	580	30-07	125
Shepherds (Begbie & Jackson) ...	15	765	239-54	993
Do. (sands)	—	750	193-92	804
St. George 1 (A. & J. Milne) ...	(10)	600	130-55	541
Tel-el-Kebir (J. G. Volk)	5	250	54-37	225
Do. (sands)	—	300	36-48	151
Tsessebe E. Ext. (Ulyett & Sear)	5	871	410-11	1700
Do. (sands)	—	696	83-43	346

Hartley District Total 8,753-49 36,686

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Samples worked to

	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
LOMAGUNDI DISTRICT.				
Alluvial (7 producers)	—	—	122-79	509
Angwa (F. L. Standen)	5	690	57-57	230
Anglian (Schapke & Quarrie)	5	—	73-56	305
Crescent (Crescent Synd.)	F	123	17-36	69
Eldorado Bkt. G.M. Co., Ltd. ...	20 4C 4P	5410	1955-23	8293
Do. (sands)	—	3072	892-02	3784
Do. (slimes)	—	2295		
Gloria (Gloria Synd.)	5	300	41-47	172
Maggiemac (J. McMurdon)	5	560	81-59	338
Do. (sands)	—	450	60-89	253

Lomagundi District Total 3,300-48 13,953

MAZOE DISTRICT.

Alluvial (1 producer)	—	—	9-28	38
Firefly (C. Laland)	2	17	12-02	50
Iron 1 (J. M. Laing)	5	1076	124-51	516
Do. (sands)	—	400	59-69	247
Jumbo 1NW (N. Irvine) (including gold undeclared July)	5	419	249-09	742
Do. (sands)	—	210	47-98	199
Kingsley Hoard B (A. S. Warwick), July	5	294	34-92	145
Mildred (Rose & Cooke)	2	156	23-83	99
Peveril of Peak (G. G. N. Southey)	2	250	38-08	158
Rosa (R. Aserman)	C	1360	84-70	351
Rothschild (Cunningham & Allison)	10	500	428-69	1777

Mazoe District Total 1,112-77 4,322

SALISSURY DISTRICT.

Alpes (P. Zaffere)	5	135	128-39	533
Beatrice V15 (New Beatrice G.M. Co., Ltd.), scrapings	—	—	12-68	53
Do. (T. Kerr), mill refuse	—	12	24-40	101
Cross Your Luck (W. A. Hoole) ...	5	193	25-10	104
Excelsior (Broodryk & Mangan) ...	2	50	32-13	133
Hague (Hague Synd.)	2	160	18-59	77
Inyague (P. Zaffere)	2	150	40-35	167

	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
Joking & Euchred (Harrison & Drabble)	8	1064	370.26	1535
Joyce (Ellsmoor & Wyper)	5	576	90.06	373
Left Bower (B. G. Byerley)	5	509	283.60	1176
Mollie (Mollie A. Synd.)	5	95	46.93	195
New Full Back (W. B. Maris)	2	62	37.77	157
Olympus C (L. Hyland), balance July	F	—	4.00	16
Planet (Planet Mine Tribute)	5 1T	480	236.11	979
Do. (slimes)	—	480	224.13	929
Do. (slimes, retreated)	—	1107	—	—
Shamva Mines, Ltd.	—	54237	2522.86	10697
Do. (sands)	—	26730	5912.79	26626
Do. (slimes)	—	27602	—	—
Do. copper plates	F	—	50.29	201
Southern Cross	2	104	16.95	70
Do. (sands)	—	280	33.82	140
Trio (Trio. Synd.)	5	486	246.54	1022
Do. (sands)	—	420	29.64	123
Other sources—scrapings from copper plate	—	—	3.28	13
Salisbury District Total	...	...	10,390.77	45,420

UMTALI DISTRICT.

Bessie & Gem (J. Buchanan)	5	1150	60.39	250
Do. sands with adjustments	—	1150	160.44	665
Elgin (Meikle & Davis)	5	708	100.98	419
Do. (sands)	—	300	29.14	121
Do. (slimes)	—	240	—	—
Guido 1 (C. Norris)	5	310	35.24	146
Liverpool (R. G. Snodgrass)	5	910	192.32	797
Do. (sands)	—	380	86.26	358
Lucknow D.B.I.E. (Toronto Synd.)	2N	530	80.21	332
Do. (sands)	—	160	30.39	126
Monte Carlo (Cawood Bros.)	H	100	11.24	47
Rezende DB1 (R. P. Synd.)	5	850	67.91	281
Rezende Mines, Ltd.	40	5200	1620.08	6874
Do. (sands)	—	3210	337.41	1432
Do. (slimes)	—	1389	350.78	1488
Do. (concentrates)	—	127	391.94	1663
Upper Town (P. M. Branken)	5WM	87	21.99	91
Umtali District Total	...	...	3,576.72	15,090

	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
VICTORIA DISTRICT.				
Cambrian (J. & D. Laing)	10	1100	121.58	504
Do. (sands)	—	700	61.62	255
Cotopaxi (T. Morris & W. Hamilton)	2	75	21.13	88
Empress (S.A. Pros. & Con. Synd.)	8	1200	92.57	384
Do. (sands)	—	750	—	—
Do. (slimes)	—	250	70.11	290
Victoria District Total	...	...	367.01	1,521

P., Grinding Pan; B.M., Ball Mill; T., Tube Mill; H., Huntington Mill; G.R., Gates' Rolls; B., Ball Mill; Pn., Pneumatic Stamp; N., Nissen Stamp; C., Chilian Mill; R.P., Roasting Plant; F., Treated at Falcon Mine; W.M., Waterfall Mill; L.M., Lane Mill.

SUMMARY OF PRODUCTION.

AUGUST, 1918.—COMPARISONS.

Gold—

August, 1918	£257,095
July, 1918	£251,740
Increase	£5,355
August, 1917	£294,359
August, 1918	257,095
Decrease	£37,264

Silver—

*July, 1918	£5,366
August, 1918	£2,351
Decrease	£3,015
August, 1918	£2,351
August, 1917	£2,237
Increase	£114

BASE MINERAL PRODUCTION.

*July, 1918	£148,829
August, 1918	£71,264
Decrease	£77,565

TOTAL MINERAL PRODUCTION.

July, 1918	£405,935
August, 1918	£330,710
Decrease	£75,225
August, 1917	£367,631
August, 1918	£330,710
Decrease	£36,921

* Including adjustment on realisation.



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Company Meetings.

GENERAL MINING AND FINANCE CORPORATION.

The Eighteenth Ordinary General Meeting of Shareholders of the General Mining and Finance Corporation, Limited, was held on Thursday, the 26th day of September, 1918, in the Board Room, General Mining Buildings, Johannesburg. Sir George Albu, Bart., presided. The Secretary read the notice convening the meeting. The Directors' Report, Balance Sheet and Profit and Loss Account for the year ended 31st December, 1917, as circularised to shareholders, were laid on table and taken as read. The Secretary then read the Auditors' Report. The Chairman, in moving the adoption of the Report and Accounts, said:—

Gentlemen,—Before launching my usual review of the operations and position of the Corporation, and of the mining companies in which we are more particularly interested, I have to explain that the unusually late period of the year in which we are holding to-day's meeting is due to causes more or less beyond our control. The great calls which the war has made upon the manhood and resources of Great Britain have for some time past been reflected in the diminution of the staffs of most business houses at home, with the consequence that the preparation and audit of the annual accounts of the London Branch is necessarily less expeditious than in pre-war days. This aspect was, in the present instance, accompanied by the considerable restriction in the mail service between England and the Cape, with the result that the audited accounts of our London and Paris offices, although posted on the 15th April, only arrived here at the beginning of July. After allowing for the incorporation of those accounts in our Head Office Books, the final audit, and for the notice to shareholders required in terms of our Articles of Association, it was found impracticable to hold the meeting before this date, and even to accomplish this it was necessary to depart from our usual practice of forwarding the Annual Report and Accounts to our London Office for issue by them to European shareholders: instead, we have had to post the Report direct from this side to all shareholders. In their Report for the past financial year your Directors have referred to the increasingly difficult conditions under which the gold mining industry is working at the present time, and which are unfortunately exemplified in the results attending the operations of most of the mines under the control of our Corporation. I shall deal in more detail with these difficulties later in my address, but for the moment I may point out their direct influence on the accounts of the Corporation by reason, in the first instance, of lower dividends accruing to us on our holdings in these companies, and also of the further depreciation of the market quotations of such holdings. At the same time, I take this opportunity of emphasising the remarks contained in your Directors' Report, that by far the greater proportion of the heavy depreciation in the stock and share assets of the Corporation is represented by our holdings in companies which are at present dormant, and that any resuscitation of the properties of these companies (such as I hope will be possible after the termination of the war) would be quickly reflected in enhanced prices for these particular assets. A comparison of the Balance Sheet at the 31st December last with that at the end of the previous year would indicate at first sight that there are no

outstanding features of an important nature which have occurred during the past year, and this, as a matter of fact, is a true reflex of the position. For your possible interest and information, however, I will make my customary analytical comparison. Taking the debit side of the Balance Sheet, Deposits show a slight increase of £158, but as a matter of fact the whole of our liability under this heading is in the nature of a book entry, as the money deposited with us represents the surplus funds of a company in which we own the whole of the share capital. Creditors for Stock Bought, at £3,963, are £1,002 higher than the previous year, in respect of certain shares purchased at the close of the year, and since paid for. Sundry Creditors show a decrease of £11,964. The Reserve of £70,000 against House Property remains the same: our policy is to write off to Profit and Loss Account any losses made on the realisation from time to time of property, and so maintain the Reserve intact. Appropriation Account shows an increased credit of £44,144, representing the net profit earned for the past year. Now as regards the assets side of the Balance Sheet. Stocks and shares in companies under our own management reflect an increase of £1,229, being the net addition to our holdings by purchases of certain stocks, after deducting sales of other shares. The next item is Shares in Other Companies, which show an increase of £20,455 and consist chiefly of purchases of shares of dividend-paying companies in the Far East Rand. Debentures of Public Companies are slightly less, owing to sales on balance amounting to £700. Our investment in Mining and House Properties, etc., shows a reduction of £15,213, by reason of realisations during the year of certain house properties. This heading in the Balance Sheet includes approximately £32,000 in respect of Mining Properties and Claim Holdings; I wish to state that although these assets have been written down in our books very considerably indeed below cost price, their intrinsic value at the present time is an unknown quantity, as they comprise many hundreds of Main Reef deep-level claims (mostly in the western section of the Rand), which so far as we can see can only come into the category of saleable assets at some future date by being incorporated with the properties of the overlying producing mines. The next item, Advances against Security, reflects a reduction of £7,709. Sundry Debtors show a substantial decrease for the year of £49,551, mainly by reason of repayments to us by subsidiary companies on account of advances made to them. Debtors for stock sold are down by £422. The final item is Cash at Banks, etc., which at £191,031, shows the satisfactory increase of £85,536, and represents the net realisation of assets to which I have just referred in detail, together with the profit earned for the year. The Profit and Loss Account indicates that our stock and share dealings are unfortunately still of a restricted character, and also that our revenue from dividends and other sources has decreased. Both these sources of income have naturally been affected by the decreasing profits earned by the mines under our management, as the consequence mainly of the heavy increases in working expenditure due to the war. On the other hand, the debit side of the Profit and Loss Account shows a material reduction in the charge for interest (representing the net balance of interest paid out over interest received). We are therefore able to show a net working profit for the year of £44,144, or an increase of £8,528

over that for the previous year. In making, in the customary manner, a short reference to our subsidiary companies, and to their operations during the current year, I have unfortunately to admit that the results attained in almost every instance show a marked—and in some cases a very serious—setback as compared with previous returns. So far as our companies whose properties are situated in the Central and West Rand are concerned, their operations were severely affected by the abnormal rains and subsequent flooding of workings experienced in the middle of February, the effect of which was felt for many weeks subsequent to the actual influx of water, by reason of the number of slope faces rendered temporarily inaccessible, and the compulsory restriction of development work for similar reasons. This additional visitation, on the top of the heavy burdens which the mines are bearing in the direction of the excessive cost of stores and labour due to the war, has rendered it difficult, and in some cases impossible, to earn sufficient revenue to meet the actual expenditure involved in winning the gold.

AURORA WEST UNITED G.M. CO., LTD.

This Company's property was one of those which suffered considerably from the water troubles in February, which flooded the lower levels of the mine and so rendered it impossible to carry on stopping and development operations in those workings for many weeks afterwards. Moreover, owing to the shortage of native labour experienced throughout the current year, the tonnage mined has been appreciably below the quantity required to maintain the full economic supply for the mill, and this is reflected in the decreased revenue and is also one of the contributing factors to the increased scale of working costs per ton, as the standing charges are necessarily distributed over a smaller tonnage than would be the case in normal circumstances. We are now endeavouring to meet this disability by the introduction of jack hammer drills for the purpose of increasing the ore mined, and up to the present the results are distinctly encouraging. For the foregoing reasons, only nominal profits have been obtained since the commencement of this year, the average monthly profit for the seven months from February to August inclusive being only about £700. As regards the future, there are distinct indications that the intact area in the south-eastern portion of the mine contains ore of a higher grade than the existing ore reserves, and this, together with the gradual drop in working costs following on the termination of the war, should eventually allow of a return to a profit-earning capacity more in accordance with former results. In the meantime the Company's liabilities have been reduced to approximately £10,000, and after their entire liquidation has been effected the profits earned will be available for distribution on the comparatively small total issued capital of £106,352.

MEYER AND CHARLTON G.M. CO., LTD.

The operations of this Company were fortunately affected to a comparatively small extent by the February floods, and the working profit for the period of 8 months to the end of August reflects the highly satisfactory total of £183,915, after including an amount of £9,519 representing gold in reserve at the close of 1917 and subsequently declared in June

of this year. These results are all the more outstanding when we realise that they have been obtained from an average tonnage milled of rather less than 11,000 tons per month. This reduced tonnage is due to the policy, initiated last year, of supporting the underground workings of the mine with reef packs, one of the effects of which is to utilise temporarily for safety purposes ore which in the ordinary way would be sent to the mill. Up to the present time, some 27,000 tons of payable Main Reef Leader and South Reef have been temporarily locked up in this manner. Recently we decided to commence sand filling underground, with the object not only of gradually releasing these packs for the mill, but also of establishing a more permanent safeguard against caving of the underground workings. This Company's history is one of such exceptional prosperity and long-continued success that a disaster of any kind was to us unthinkable. Consequently the shock of the terrible accident which occurred in the breaking away of the man cage on the morning of the 18th July, whereby the occupants—21 men, representing half of the underground white employees—lost their lives, came, if possible, with added force. For several years previously the mine had experienced not a single accident of a fatal character, and in fact had an exceptional record in this, as well as in other respects. I take this opportunity of again expressing our deep regret at this unaccountable catastrophe, and our great sympathy with the dependents and friends of the unfortunate victims.

NEW GOCH GOLD MINES, LTD.

The returns from this property for the current year reflect a continuous struggle to earn even a nominal working profit. Owing to the fact that by far the greater proportion of the payable ore contents of the mine have been exhausted, the stopes now available are both restricted in number and scattered, with the result that the tonnage milled for some time past has been necessarily considerably reduced. Then, too, the abnormally high cost of essential mining supplies, and the other extra items of expenditure now prevailing, automatically rule out of the payable category blocks of ore which previously could have been treated with a margin of profit. This condition of affairs is likely to continue during the war, or until development of the block of 21 claims leased from the City Deep, now proceeding, has opened up additional payable faces. In this latter connection, I may say that the subsidiary shaft which is being sunk into the eastern portion of the City Deep claims, and the drives and winzes therefrom, have disclosed satisfactory values, and that the work of sinking a second subsidiary shaft, to prove the western portion of the claims, has just been commenced.

ROODEPOORT UNITED MAIN REEF G.M. CO., LTD.

In the course of my remarks on the prospects of this Company at the annual meeting of our Corporation a year ago, I expressed the hope that an improvement in the native labour supply might materialise, which subsequently would be reflected in an increased tonnage for the mill, and a correspondingly higher standard of working profits. As a matter of fact, during the last few months of 1917 and in January of this year, the complement of natives showed an increase, which was reflected in improved results from mining operations. Unfortunately, in February tremendous and abnormal rains fell in the Roodepoort district, and at the same time the native labour force diminished to a very serious extent, with the result that not only were stoping operations necessarily restricted, but the shaft sinking and development work, which is of such vital importance to a mine in the position of

this company, was also retarded. The effect of these drawbacks was at once apparent in the reduced tonnage milled, which, instead of being in the region of 28,000 to 30,000 tons per month, fell to between 22,000 and 23,000—and even as low as 20,600 tons in the case of June. Consequently, for the past seven months the mine has worked at a steady loss of anything between £1,000 and £2,500 per month. I admit that, at first sight, it would appear absurd to carry on milling under such circumstances, and that the better course would be to shut down the property for the present, and await the more normal conditions in regard to stores and labour which we all trust will arrive after the termination of the war. Quite apart, however, from the disastrous effect which the adoption of such drastic measures might have upon the local community concerned, I detest the idea of closing down a mine so long as there is a possible chance of pulling through existing difficulties, and I am not yet at all convinced that the returns for recent months are a true reflex of the possibilities of the Roodepoort United. The efficiency of the workers as a whole, both white and native, although recently showing some advance, is still undoubtedly capable of considerable improvement, and if this is brought about I have no hesitation in saying that, notwithstanding the burdens of increased costs due to war conditions which are felt most especially by a struggling mine, we can at least make the revenue equal the expenditure, and should even show a small margin of profit. We have therefore decided to continue operations for a further period of a few months, and if the result be such as I have foreshadowed, we shall continue so long as we are able to make both ends meet, because, after all, if we can make only a nominal profit in such difficult times as these, it is obvious that we should do appreciably better after the war. A company, such as this, possessing a record of many years of successful gold production, once having shut down its property might have considerable difficulty in subsequently re-opening, whereas to have been able to carry on through a period of great stress would undoubtedly be a very great encouragement towards continuing, and even expanding, operations when that stress has disappeared.

VAN RYN GOLD MINES ESTATE, LTD.

The working profit of this Company for the eight completed months of the current year is £60,755. This considerable drop on the previous standards is due to several causes. As compared with pre-war figures, the tonnage milled has decreased from about 39,000 to the present level of approximately 32,000 tons per month, the grade has also fallen from 26s. to an average of 21s. 6d. per ton, and the costs have risen by roughly 2s. 6d. per ton. The diminished tonnage is accounted for partly by shortage of native labour, and partly by the exhaustion of certain sections of the mine with unusually large reef widths, which yielded big tonnages of ore at a low cost, and their replacement by other sections where the reef is appreciably narrower, and where the conditions of mining are less favourable. The fall in grade is the always regrettable, but none the less inevitable feature of a mine which, after between 20 and 30 years of active operation, may be said to have seen its best days. The rise in working costs is due entirely to war conditions and to the reduction in tonnage milled.

WEST RAND CONSOLIDATED MINES, LTD.

The results from the mining operations of this Company for the current year also reflect the serious effect of the February floods, coupled with shortage of native

labour. Over 14 inches of rain fell on the property in the middle of February during a period of less than 12 hours, and transformed it into something more nearly resembling a waterworks than a gold mine. Normal working conditions were impossible for many weeks afterwards, during which, in the instance of the Rand Shaft, it was a case of pumping and baling night and day in order to save the mine from being drowned out altogether. It is not surprising, therefore, that the February and March returns showed a loss on working, and that for April and May only nominal profits of £1,000 and £1,300 respectively were earned. One of the difficulties of this Company is that there exists in the Rand Shaft underground workings a water-bearing fissure which in normal times releases some 250,000 gallons of water daily, and fully employs the capacity of the pumping plant installed. We really require more powerful pumping units, but it is impossible to obtain these during the war. Otherwise the prospects of this Company are more satisfactory than when I addressed you a year ago. The possibilities of the very big mining area held, of 2,000 claims on Main Reef and over 700 claims on Battery Reef, are such as to indicate a successful future, and I may add that the development on both reefs at the present time is distinctly encouraging.

CINDERELLA CONSOLIDATED GOLD MINES, LTD.

Beyond recording that the Far East Rand Proprietary Mines, Ltd., have given formal notice terminating, as from the 1st November next, the mining facilities granted to them by the Cinderella Consolidated (and referred to in my remarks to you at our last annual meeting), I have nothing of fresh interest to say to-day with reference to this Company. I am still, however, strongly convinced that in the very large holding of our Corporation in the shares and debentures of the Cinderella Company we possess an asset which will prove one day to be of considerable value. In this connection, I may append the following remarks made from the chair at the annual meeting of the Company in June last:—"It is interesting to note from the Chairman's speech at the recent annual meeting of the E.R.P. Mines that the development work in the block of ground held by that Company, and lying between the eastern boundary of the Cinderella Deep and the western boundary of the Central section of our mine—which was effected, by arrangement with your Company, from our upper workings—had at the end of last March opened up 108,183 tons of ore of a value of 6.8 dwts. per ton. These disclosures tend to confirm the indications previously given by our own development operations, especially in the 5th level connecting drive below this particular block, that our ground between the Deep and Central sections of our property is of very satisfactory value. I may take this opportunity of correcting a misapprehension which appears to exist in the minds of quite a number of people, here and elsewhere, i.e., that the future of our property lies mainly in developing the reef at increasingly greater depths. This would undoubtedly have been the position if our mining area were still confined to the original Cinderella Deep mine of 289 claims, but by the acquisition in 1910 of approximately 1,800 additional claims, we have several hundreds of claims in our eastern section which can be prospected and developed without going a single foot deeper than our lowest existing workings. In other words, the trend of our mine nowadays is more in a lateral direction than to the dip—an important fact to bear in mind when attempting to make comparisons with the neighbouring property and when gauging the possibilities of the future."

NEW STEYN ESTATE GOLD MINES, LTD.

The large mining area held by this Company lies, as you are probably aware, immediately to the dip of the Durban Roodepoort and Princess Estate Gold Mines, and I may add that the major portion of the area forms the deep level of that section of the Roodepoort district which disclosed, over a period of many years, very satisfactory values on South Reef. A matter of interest in connection with our large holding in this Company is that the Durban Roodepoort Deep have just commenced sinking a new circular shaft in their property, at a point situate about 900 feet above the northern boundary of the New Steyn ground. Under ordinary conditions the shaft should reach the reef horizon in approximately two years' time, and the subsequent development work from it will give us a very fair indication of the value of the New Steyn ground in the vicinity, and also of the lower section of the Roodepoort United claims adjoining the eastern boundary of the Durban Deep.

RAND COLLIERIES, LTD.

I referred last year to the improbability of anything being done in the direction of resuscitating this Company until after the war, and I have nothing new to add except that certain items of plant have since been sold by the Company at prices which should easily cover the cost of their replacement at a subsequent period, if required. In the meanwhile, the monies accruing from these realisations have been utilised in reducing the Company's liability to your Corporation. In assessing the possibilities of this concern, one should not overlook the fact that in addition to the gold mine it possesses the coal rights over an area of 5,903 acres which may, quite conceivably, be of future value. In the foregoing remarks I have attempted to convey a description of the affairs of each of our subsidiary companies. As regards the boring operations on Rand Rietfontein, as I foreshadowed last year, further investigation by boring gave the same disappointing results as the previous boreholes, and we therefore abandoned the venture. Reference is made in your Directors' Report to our unsuccessful tender for the Government Lease of the mineral rights of De Springs. As we are always desirous of obtaining new business of a suitable character, we again tendered, in March of this year, for the Lease offered by the Government of the mineral rights of the western portion of the farm De Rietfontein. We made a very fair offer, and were frankly disappointed in receiving an intimation that we had been unsuccessful. We were still more disappointed and astonished, however, subsequently to find that the offer made by the tenderers was on a basis less favourable to the Government than our own, so far as the consideration payable to the Government was concerned. We therefore wrote to the Minister of Mines, stating our inability to understand why our offer had been declined, and intimating that if the acceptance by Government of tenders is not subject to the natural influence of the highest *bona fide* offer, it would be impossible either for us or any other financial house to know on what basis to make future tenders. We received a reply to the effect that it is not the policy of the Government to give reasons in regard to acceptance or non-acceptance of tenders, but adding that the slight superiority in scale offered by us as against that of the accepted tenderer was more than counterbalanced by "other features" of the latter's offer. Now, gentlemen, let us examine these "other features." According to the official communication as given to Reuter's Agency and subsequently published, they were two in number: (1) that a portion

of the initial issue of the capital of the company to be formed by the successful tenderers would be offered to the public for subscription at par, and (2) that facilities would be granted by the Springs Mines, Ltd., to expedite the development of the lease area. I strongly contend that neither of these "features" should have been allowed to influence the Government, for the following reasons: As regards (1), i.e., the offer to the public of a proportion of the shares of the new company, we had ourselves arranged in the event of our tender being successful to offer 200,000 shares at par to the public of the Union, with options on a further 200,000 shares for a period of several years. We did not, however, include this in our actual tender for the simple reason that, when tendering in October, 1916, for the lease of the Government ground on Brakpan, we included an offer to the public of 350,000 shares at par, but were subsequently informed that the Mining Leases Board could not take this offer into consideration, inasmuch as no such condition had been stipulated in the Government notice calling for tenders! With reference to the second "feature" of the offer by our successful competitors, i.e., the facilities to be granted by the Springs Mines, Ltd., let me remind you that it was distinctly stated by the Government in the instance of this Lease that applications must be on the basis of the formation of a company to work the ground as a *separate proposition*, and it was very clearly understood by everybody interested that this new condition had been deliberately introduced by the Government for the purpose of eliminating the big pull that adjoining companies had possessed in the instance of previous Leases for offering facilities for amalgamation—and of, therefore, possibly obtaining a larger number of tenders by attracting applications from financial houses which did not control mining areas adjoining the Government ground under offer. Surely, then, in taking into account the offer of facilities through the Springs Mines, the Government absolutely departed from the new principle laid down by it (no doubt after full consideration), and so clearly indicated in its notice calling for tenders? But, apart from this astonishing negation of its own conditions, a further very practical reason why the Government should not have allowed the facilities in question to weigh with it, in deciding the merits of the different offers, was that our Corporation could and would have obtained similar facilities had we succeeded in securing the lease. There can be no question about this, because the Board of the Springs Mines could not, in justice to their shareholders, have refused reasonable facilities for the granting of which we should have been prepared to offer a valuable consideration over and above the actual cost of the work involved. Naturally, these remarks apply to any other financial company which might successfully have tendered: the exchange of facilities in such matters as these is of common occurrence as between mining houses and companies on these fields. Naturally, also, we could not very well previously have approached the Board of the Springs Mines on the matter, in view of the fact that the control is in the hands of people whom we knew to be almost certain competitors! I have dealt with this matter at some length because it is, to my mind at least, obvious that we have not received the treatment or consideration to which we were entitled. I may remind you that we have been *bona fide* tenderers for every Government Lease offered during recent years, and, as you can readily appreciate, it is no light matter to make the necessary financial arrangements for the huge sums of money involved in these Leases, especially in our case, where prosperity and good fortune have for some considerable time been lacking. I can only assume that the

vision of the introduction of millions of American capital to this country had a sub-conscious influence on the Government authorities responsible for the decision of these Leases: the monies for the raising of which we had provided in the event of obtaining the Lease, were admittedly South African and local. Still, I should have thought that, if any preference is to be given (which I neither expect nor ask for), it should be to those who have already over a long period of years been responsible for the introduction and expenditure of millions of capital for the benefit of this country.

EFFECT OF WAR CONDITIONS.

In his address at the last annual meeting of the Chamber of Mines, in March of this year, the President referred to the total burden of increased costs borne by the Industry as then amounting to over £5,000,000 per annum. It can safely be stated that any variation during the past six months has been in the direction of enlarging, rather than reducing, that figure. For the purpose of illustrating the effect of these burdens so far as our group is concerned, I have had statistics prepared giving a comparison of the actual cost of stores, labour, etc., as at June, 1914, and of the corresponding expenditure at the present time. The increased outlay on stores, active service pay, war bonus and higher rates of pay, and the additional holiday concessions, represents a total of not less than 3s. 3d. per ton milled. I wish to emphasise the point that this is the direct effect on working costs only, and is exclusive altogether of the war levy on profits and the increased gold realisation charges: I have left these out of my calculations because the gold realisation charges are not debited to working costs under our system of accounts, but are deducted from the value of the gold won, and the war levy is of course a tax on profits, which only affects to an appreciable extent such of our subsidiaries as are able to earn a substantial margin of revenue over expenditure. Now I want you to realise clearly the effect of this 3s. 3d. per ton, and with this object in view I translate it into the following statement showing what it amounts to per month and per annum in the instance of the producing mines of our group:—

Mine.	Extra cost £ per month, say	Extra cost £ per annum, £ say
Aurora West United ...	2,220	26,600
Meyer and Charlton ...	2,250	27,000
New Goch Gold Mines ...	1,640	19,700
Roodepoort United ...	3,600	43,200
Van Ryn Estate ...	3,970	47,600
West Rand Cons. ...	5,660	67,900
Group ...	£19,340	£232,000

If you take the total extra cost per annum, as given in the above statement, and add it to the working profit for 1917 shown in the references to each of our working companies in the directors' report of the Corporation for last year, you will be able to get a better idea of the probable results of those companies had we been operating under the conditions prevailing before the war. But to make a still fuller comparison it would be necessary to add to the probable profit an amount equal to approximately 1 per cent. of the total value of the gold produced by each company, representing the increased cost of realising our gold under the existing arrangements with the Bank of England, and then a further amount equivalent to 5 per cent. on the total working profit so arrived at, in respect of the extra taxation imposed by the Union Government in consequence of the war. The foregoing details constitute the *direct* burdens, but there are also

other disabilities with which we have to contend, and most of which are attributable to the influence of war conditions, such as:—

(1) A general shortage of skilled white men.

(2) A serious shortage of natives, and consequent reduction of tonnage mined, with resultant decrease of revenue and increased working cost per ton milled owing to the standing charges having to be distributed over a smaller tonnage.

(3) A less efficient type of native being recruited for the mines, possibly as the result of sending a native labour contingent to Europe and of the opening up of new industries.

(4) The inferior quality of certain classes of stores, as compared with pre-war standards.

(5) The shorter hours worked, notably as regards the Saturday shift.

I think you will agree that even a portion of the many adverse conditions above described would constitute a pretty severe burden to carry, but taken together—as they have to be—they represent a combination which, especially in the instance of the low-grade mines, threatens to prove overwhelming. It must not be overlooked that in the case of those mines (and they are increasing in number almost every month) which, although showing a small working profit, are actually running at a loss by reason of the gross profit being insufficient to cover additional outgoings such as miners' phthisis compensation, debenture interest, and other extraordinary expenditure not included in working costs, the deficit has up to the present been provided either out of funds in hand or by loans from the controlling house, and that there is a limit to both these sources, which is rapidly approaching. We have been informed repeatedly by the Home Government that it is vitally necessary in the interests of the Empire that the gold output shall be maintained at the highest possible level. That this may be done, it is obvious that some form of relief for those mines rendered temporarily unprofitable owing to war conditions is imperative. The question of the form of such relief is one that has engaged much attention for some time past, and different specifics have been proposed, discussed and debated at great length—I might almost say *ad nauseam*. We have experienced a Select Committee of the Union House of Assembly, which reported on the subject six months ago; more recently, there have been meetings in London of the representatives of the gold producers of the Empire, at which suggestions have been made and resolutions passed; and still later, we hear of a committee of investigation being formed. In the meantime, nothing tangible has resulted, and the position is becoming more and more acute. There is an old proverb to the effect that while the grass is growing the horse may starve; it rather looks as if it may be our unfortunate destiny to represent a practical demonstration of the adage, and that, unless something is done without further delay, several of the mines must inevitably cease operations. This statement is no new one. Repeated representations of the position have been made by the President of the Chamber of Mines and the Mining Houses for some time past. It would be idle to recapitulate what has been said on these occasions, since the position is already very clearly understood; but, at the same time, I want to sound a final note of warning and to urge the Imperial Authorities—since they are the only body to whom, under present conditions, we can look for relief—to move in the matter before it is too late. The question as to the particular form of relief, whether it should be by remission of the gold realisation charges, or by subsidising in some shape or other the poorer mines, has at the present acute

stage become of secondary importance to the urgent necessity for such relief—no matter of what nature—to be forthcoming immediately and to be of such a substantial character as to be of real assistance. That is the position, stated plainly, and surely, with the struggling mines which constitute the bulk of the gold producers of our group, we should be in a position to judge. I might add that the gravity of the situation has evidently been grasped by one section of this community, viz., our white workers on the mines, if one may draw an obvious inference from the overwhelming majority with which they have accepted the latest proposals of the Chamber of Mines in regard to war bonuses and other matters of working conditions.

NATIVE LABOUR.

In the earlier portions of my address I made references to the shortage of native labour experienced on the mines during the last eighteen months, to its adverse effect upon working at proper efficiency, and to the fact that on most of the properties we are introducing jack hammer drills in the endeavour to make good the deficiency in tonnage. So far, our experience has been that these drills are proving a most useful substitute for hammer boys, and I am most hopeful that the innovation has come to stay. In making this statement I do not mean to imply that the existing types of the machine will necessarily allow for the gradual elimination of hand drilling, but that, having regard to the undoubted assistance which they are giving, and the great demand that will follow any material improvement in their design, it is not unreasonable to anticipate that such improvement will be found possible of accomplishment in the comparatively near future. If, like myself, you can go back over many years during which one of our greatest difficulties has been the constantly recurring periods of native labour shortage, you will readily appreciate the boon which an efficient and economical mechanical stoping drill would represent to the managements of the mines, especially in view of the new industries springing up both here and in other parts of South Africa, which naturally absorb an increasing number of natives who would otherwise be available for the Witwatersrand gold mines. I attach very great importance indeed to the potentialities of the jack hammer type of drill, and am frankly sanguine as to its ultimate lasting success, notwithstanding our experiences and disappointments in respect of other promising machine drills in past years.

WHITE LABOUR.

I am not desirous of extending my address to a wearisome or undue length, but I think it would be leaving out one of the most important features in connection with our industry if I omitted in my remarks to-day a reference to our white employees, especially in these times when the future relationship between employer and employed is a matter of earnest thought and discussion throughout civilised countries. As regards the mines of the Witwatersrand, the subject has passed the initial stages, and has materialised into working conditions which probably are unequalled the world over. Let us examine these conditions and see what they really amount to. To start with, we have agreed to a basic minimum rate below which no white workman may be employed on the mines. We have established in every class of employment minimum rates of pay—this minimum being fixed at a level which practically represents the standard wage for skilled workers. We have reduced the working hours of both underground and surface men, without any correspond-

ing reduction of wages. We have instituted an exceptionally generous scheme of annual holidays on full pay, the length of the holiday varying from a minimum of a fortnight in the case of surface men up to four weeks for underground workmen with three years' service. In the endeavour to bring about better relations between the employers and the men, we have established facilities for Conciliation Boards, where matters which affect working conditions can be discussed at round table conferences, and we have instituted joint Reference Boards, to which any individual dispute which is found difficult of settlement between the management and the men concerned can be referred for discussion and award.

In all the preliminaries and negotiations leading up to these concessions we have, as a group, given our ready and willing support to the Chamber of Mines, because we have hoped that we should attain to a better understanding between our employees and ourselves; that we should realise more settled industrial conditions, and that, from the point of view of our shareholders, an all-round improvement in efficiency would result. In regard to the relations with our employees, there can be no doubt that a better feeling does exist, but when we come to investigate the position from the point of view of improved efficiency, I am bound to say that the hoped-for result has not materialised. In agreeing to reduce the working time of the mechanics to 48 hours per week, and of the underground workers to 48½ hours bank-to-bank, we were influenced to a large extent by the assurances of the representatives of the men concerned that no loss in total output of work would result. This was a matter of considerable importance to us, because, during the war especially, it is essential—I might almost say vital—that there shall be no decrease in the volume of work accomplished. On the question of actual results I can, of course, only speak definitely with regard to the mines under our control, and it is with regret I have to state that the shorter hours now being worked have had a distinctly adverse influence on the results obtained. In addition to this, there can be no doubt that, taking our group as a whole, the general efficiency of the men is distinctly below the pre-war standard. This is most discouraging. The substantial improvements in working conditions and rates of pay to which we have committed ourselves are costing a very large amount of money, and this, added to the increased expenditure directly due to war conditions, has largely assisted in bringing several of our subsidiary companies into their present precarious position. I do not grudge the concessions we have made, and I sympathise to a large extent with the efforts of the workers to improve the conditions of their employment; but, surely, after what we have done from our side, we are entitled to expect some return from them. It is an indisputable fact that the serious difficulties with which several of the lower grade mines now have to contend could be appreciably lessened if they could obtain a better standard of efficiency from their white employees. I do not for one moment suggest the expenditure of an excessive amount of energy or labour on the part of the men concerned. At more than one mine of this group it is quite obvious that even average efficiency, such as we previously obtained, would certainly result in the conversion of actual losses into a margin of profit. I would ask our employees to bear in mind what this means, and to realise that, not only from a moral, but also from a material point of view, it is directly in their own interests to give us better efficiency, since by so doing they will protect their means of livelihood, by assisting us to keep the mines running. I wish to say quite frankly that in my considered opinion it

is futile to expect that, in the event of a considerable number of low-grade mines having to close down operations in the near future, the whole of the workmen at present employed by them could subsequently be absorbed by those companies, more fortunately situated, which would still be able to continue operations. It would be impracticable for most of the surviving mines to make the necessary arrangements above and below ground which would enable them to find work for any substantial addition to their white labour complements, and even in the case of those mines where such arrangements could be made, a considerable time would elapse after the closing down of the poorer properties before the change could be effected, during which unemployment would inevitably occur.

The foregoing review, so far as it relates to the various interests under our management and to the affairs of the Corporation, is necessarily of a disappointing character, by reason of the difficulties with which we have been and still are faced. These difficulties and setbacks are quite exceptional, however, and we must not allow ourselves to be unduly influenced by them in taking a view of the position. They are, of course, the result of the abnormal conditions under which we are to-day living—after more than four years of a devastating war such as has never been experienced in previous history. I would therefore ask you to bear in mind that in spite of the stress of these circumstances we have been able to keep our heads above water, and I think you will agree we are justified in anticipating that after the termination of the war, when there will be a gradual return to more normal conditions, we shall be enabled to work our present producing mines on a more profitable basis, and that the outlook for reactivating such propositions as the Cinderella Consolidated and Rand Collieries, and transforming their existing unproductiveness into active sources of revenue, will be materially improved.

I have much pleasure in again recording our appreciation of the services rendered by the heads of the several departments, both financial and technical, and the other members of the staff of the Corporation, at the Head Office and also at the London and Paris Offices. I am pleased to say that there have been no

changes during the past year, except that Mr. Robert Pill, who resigned his position as Technical Adviser to the Corporation and to our subsidiary companies, in order to take up war work, has now been succeeded by Mr. Erroll Hay, whose long experience on the Rand will, I am sure, be of considerable benefit to us.

The motion adopting the Report and Accounts was seconded by Mr. Arthur French and carried unanimously.

The Chairman stated that, in terms of the Articles of Association, Mr. Martin Luebeck retires from the Board of Directors, and that he had much pleasure in proposing his re-election. This was seconded by Mr. J. V. Blinkhorn and carried unanimously.

In proposing the re-election of the Auditors, the Chairman expressed his great regret, and that of his colleagues on the Board, at the recent death of Mr. W. S. Ogle, the senior partner of the firm of W. S. Ogle & Co., who had been the London auditors to the Corporation practically from its inception. Messrs. Douglas, Low & Co. were re-appointed auditors in Johannesburg, and Messrs. W. S. Ogle and Co. in London, the remuneration voted for services during the past year being 225 guineas and £150 respectively.

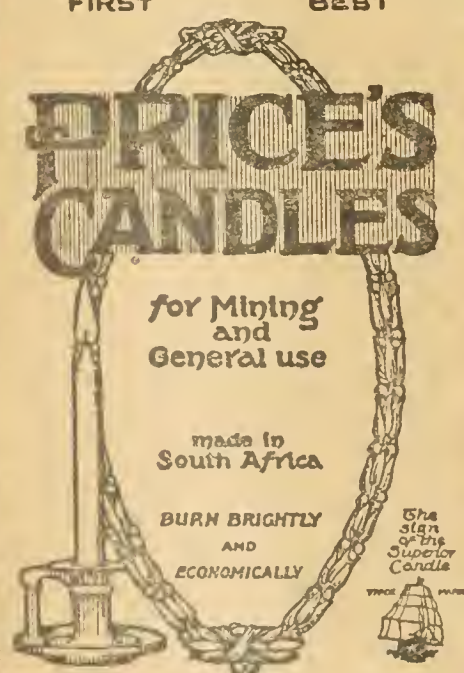
This concluded the proceedings.

KLEINFONTEIN ESTATES AND TOWNSHIP, LTD.

The Seventeenth Ordinary General Meeting of Shareholders of the Kleinfontein Estates and Township, Ltd., was held in the Board Room, National Bank Buildings, Simmonds Street, Johannesburg, on Wednesday, the 25th day of September, 1918. Mr. Wm. Dalrymple presided, and there were also present: Messrs. Edw. H. Read, W. J. Gau, W. H. B. Frank, A. G. Gill, Monsieur Le Comte F. de Ferrieres, and L. S. Raymond (Secretary). The Chairman declared the Meeting duly constituted, and the Notice convening it was read by the Secretary. The Proceedings of the Sixteenth Ordinary General Meeting of Shareholders, held on 26th September, 1917, were confirmed, and the Directors' Report and Statements of Accounts for the year ended 30th June, 1918, as laid on the table, were taken as read. The

Secretary read the Auditors' Report. The Chairman said: Gentlemen.—The Reports of the Directors and Statements of Account for the year ended 30th June, 1918, are before you for your consideration. The total profit earned during the period amounted to £18,547, after deducting an amount of £555 for depreciation. This, together with the amount of £287 brought forward from last year gives a total of £18,834, which was dealt with in the Appropriation Account, as follows:—Government taxation, £556; Dividends, £14,875; leaving a balance to be carried forward of £3,403. Three farm plots and 80 stands were sold during the year. At the 31st August, 1918, the total contents of the dams was 852,000,000, as compared with 394,000,000 gallons at the corresponding date in 1917. An application has been made for a further extension of the Benoni Township, in order that Township Title may be obtained for certain agricultural lots that have been sold to the west and north of the existing Township. This application is now under consideration of the Township's Board. The Municipality has built a road over the bottom dam, which now gives free access to the Northern Extension. The Company assisted the Municipality with a grant of £600, and a loan of £1,200 towards the cost of this road. During the last rainy season a considerable amount of water collected in a small pan in the Township, flooding a number of stands. Arrangements were made with the Municipality to drain this area at a cost to the Company of £324. I now move the adoption of the Reports and Accounts before you, and the confirmation of the action of the Directors in declaring Interim Dividends Nos. 33, 34 and 35, totalling 17½ per cent. The motion was seconded by Mr. Gill, and carried. Monsieur Le Comte de Ferrieres moved that the retiring Directors, Messrs. Wm. Dalrymple and A. G. Gill, be re-elected. This was seconded by Mr. Gau, and carried. The Chairman moved, and Monsieur Le Comte de Ferrieres seconded, the re-appointment of the Auditors, Messrs. C. L. Andersson and Company and F. W. Diamond and English, for the ensuing year, and that their remuneration for the past audit be fixed at one hundred guineas each. The proceedings then terminated.

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Notice of General Meeting of Shareholders.

NOTICE IS HEREBY GIVEN that the Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room of the Johannesburg Consolidated Investment Company, Limited, Consolidated Building, Fox Street, Johannesburg, on TUESDAY, the 26th November, 1918, at 11 o'clock in the forenoon, for the purposes following:—

- To receive and consider the Statement of Accounts and Balance Sheet for the period ending the 30th June, 1918, and the report of the Directors and Auditors thereon.
- To elect four Directors in place of those retiring, in terms of the Company's Articles of Association.
- To elect Auditors, and to fix their remuneration for the past financial year, and to transact any other ordinary business of the Company.

By Order of the Board,

W. H. MARDALL,

Secretary.

Johannesburg
30th September, 1918.

New Companies.

The following is a list of new companies registered in June, 1918:

5568. V. S. Pillay and Sons, Ltd., 394, Boom Street, Indian Bazaar, Pretoria; capital, £300. Private company.
5569. Abdool Gani, Ltd., 4/1, Boom Street, Pretoria; capital, £500. Private company.
5570. P. Murugan and Sons, Ltd., 596, 20th Street, Vrededorp; capital, £500. Private company.
5571. The Lee Boot Factory, Ltd., 70, Riasik Street, Johannesburg; capital, £1,000. Private company.
5572. Industrial Finance and Trust Co., Ltd., 16, New Court Buildings, Market Street, Johannesburg; capital, £50. Private company.
5573. The South African Horse-Shoe Manufacturing Co., Ltd., 65, Schubart Street, Pretoria; capital, £800. Private company.
5574. Hafezjee and Shaikh, Ltd., 161, Market Street, Johannesburg; capital, £1,000. Private company.
5575. Conatantia Buildings, Ltd., 268, Church Street, Pretoria; capital, £6,000. Private company.
5576. Central African Finance and Developing Co., Ltd., 80, Avenue Road, Fordsburg; capital, £3,000. Private company.
5577. McEwan's Building Co., Ltd., office of G. I. Hoffman, Grosvenor Chambers, 36a, Loveday Street, Johannesburg; capital, £4,000. Private company.
5579. The Hamidia Masjid Society, 24a, Market Street, Johannesburg; capital £27. Section 21.
5580. D. S. Bamath, Ltd., Helen Street, Amersfoort; capital, £3,600. Private company.
5581. Bamni Trust, Ltd., 12, Rosenberg Arcade, 58, Market Street, Johannesburg; capital, £1,000. Private company.
5582. The Parktown North Masonic Hall Co., Ltd., Residence of H. Comber, Bymewood, Seventh Avenue, Parktown North, Johannesburg; capital, £2,000. Private company.
5583. Taynoor, Ltd., 39, Market Street, Johannesburg; capital, £100. Private company.
5584. West Springs, Ltd., 2nd Floor, The Corner House, Commissioner Street, Johannesburg; capital, £1,400,000. Private company.
5585. Suliman Moosa Cassim, Ltd., corner of King Edward and Retief Streets, Potchefstroom; capital, £1,000. Private company.
5586. I. B. Joffe, Ltd., 57, Becker Street, Newtown, Johannesburg; capital, £200. Private company.
5587. Heath's Hotel Buildings, Ltd., 121, Commissioner Street, Johannesburg; capital, £25,000. Private company.
5588. Simla Estate, Ltd., 5, Bell's Buildings, Main and Harrison Streets, Johannesburg; capital, £500. Private company.
5589. Frank Stevens, Ltd., Silberman's Buildings, End Street, Johannesburg; capital, £5,000. Private company.
5590. The Magnet Chemical Works, Ltd., 73, Fox Street, Johannesburg; capital, £2,000. Private company.
5591. Witbank Trading Co., Ltd., Zeekoewater, P.O. Witbank District, Middelburg; capital, £400. Private company.
5592. The Premier Paper Mills, Ltd., 14, Brown's Buildings, Loveday Street, Johannesburg; capital, £10,000. Private company.
5593. Fordsburg Plumbing Works, Ltd., 201, Main Street, Fordsburg; capital, £17,290. Private company.
5594. Clothing and Shirt Manufacturers, Ltd., 214, Commissioner Street, Johannesburg; capital, £4,500. Private company.
5595. Knight Light Company, Ltd., 1, New Court Buildings, Market Street, Johannesburg; capital, £1,000. Private company.
5596. The Municipal Magazine, Ltd., 27, Henwood's Arcade, President Street, Johannesburg; capital, £1,000. Private company.
5597. Nalke, Ltd., 18, Barkley Arcade, Market Street, Johannesburg; capital, £2,000. Private company.
5598. Central Lime Works, Ltd., Western Lime Co. Siding, Roodepoort, No. 22, adjoining Ventersdorp; capital, £1,500. Private company.
5599. Vvas, Ltd., 356, Vermeulen Street, Pretoria; capital, £600. Private company.
6600. The Griffin Engineering Co., Ltd., 94, Main Street, Johannesburg; capital, £75,000. Private company.

FOREIGN COMPANY.

5578. Manganese, Ltd., care of Harry Hyman, 65, Stock Exchange Buildings, Fox Street, Johannesburg; capital, £50,000.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANIES.

4646. Southern Van Ryn Reef G.M. Co., Ltd., Johannesburg.
4477. Spitzkop Colliery, Ltd., Johannesburg.
4646. Southern Van Ryn Reef G.M. Co., Ltd., Johannesburg.
4943. New Compound Diamonds, Ltd., Johannesburg.

CHANGE OF NAME.

5306. Wineberg, Ltd., to Cafe Pollock Ltd., Johannesburg.
5107. The Union Mica Mines, Ltd., to The Union Mica and Corundum Mines, Ltd., Johannesburg.

PROSPECTUSES.

- African Canning and Packing Company, Ltd., Johannesburg.
5584. West Springs, Ltd., Johannesburg.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

4391. Picot and Company, Ltd., Johannesburg. Increase of capital.
4912. The Standard Brass Foundry, Ltd., Johannesburg. Increase of capital.
4563. M.E. Furniss, Ltd., Johannesburg. Alteration of articles.
1915. Co-operative Exchange Yard, Ltd., Johannesburg. Alteration of articles.

2196. Balcony Tea Rooms, Ltd., Johannesburg. Change of name.
4835. Promoters, Ltd., Johannesburg. Liquidation.
4690. The Industrial Commercial and Land Agency, Ltd., Johannesburg. Powers of Directors.
2905. Verdite Mines, Ltd., Johannesburg. Alteration of articles.
5305. Pretoria Iron Mines, Ltd., Pretoria. Increase of capital.
5066. The French Tea and Coffee Co., Ltd., Johannesburg. Allotment of shares.
5162. Lesser Minerals Trust, Ltd., Pretoria. Increase of capital.
5284. Harvester Diamond Mining Co., Ltd., Johannesburg. Liquidation.
1046. Standard Buildings, Ltd., Johannesburg. Alteration of articles.
3403. Club Benoni, Ltd., Benoni. Alteration of articles.
3110. Umbelosi Tin and Exploration Co., Ltd., Johannesburg. Destruction of books.
4065. Leon Levson Studios, Ltd., Johannesburg. Destruction of books.
5452. The Scala Theatre, Ltd., Johannesburg. Liquidation.

NOTICES OF INCREASE OF CAPITAL.

4391. Picot and Co., Ltd., Johannesburg; from £2,000 to £2,500.
4912. Standard Brasa Foundry, Ltd., Johannesburg; from £5,000 to £10,000.
4711. Wilfred Cassere, Ltd., Johannesburg; from £2,000 to £10,000.
5231. Mining Timber and Produce Co., Ltd., Johannesburg; from £1,000 to £4,500.
4414. Lawrence Riordan and Co., Ltd., Johannesburg; from £1,000 to £3,000.
5213. Witfontein Fruit Farms, Ltd., Johannesburg; from £2,000 to £3,000.
5117. Union Tin Mines (Roodeval Olifants River), Ltd., Johannesburg; from £8,500 to £9,000.
5305. The Pretoria Iron Mines, Ltd., Pretoria; from £25,000 to £35,000.
3944. Johannesburg Motor Mart, Ltd., Johannesburg; from £55,000 to £100,000.
5162. Lesser Minerals Trust, Ltd., Pretoria; from £1,500 to £3,000.

NOTICES OF LIQUIDATION.

4835. Promoters, Ltd., Johannesburg; capital, £2,000. Voluntary.
5284. Harvester Diamond Mining Co., Ltd., Johannesburg; capital, £1,500. Voluntary.
5452. The Scala Theatre, Ltd., Johannesburg; capital, £15,000. Voluntary.

NOTICES OF CHANGE OF ADDRESS.

3297. Bourne and Co., Ltd., care of Arthur Penhaligon, Henderson's Buildings, 60, Von Brandis Street, Johannesburg.
488. Transvalia Land Exploration and Mining Co., Ltd., 29, Church Square, Pretoria.
2831. Greatrex, Ltd., 112a, Commissioner Street, Johannesburg.
4829. Valley Stores, Ltd., 99, Broadway, Bezuidehont Valley, Johannesburg.
5050. Brakpan Foundry, Ltd., Barsdorfs Buildings, Marshall Street, Johannesburg.
4619. National Automobile Co., Ltd., 88, Anderson Street, Johannesburg.
5503. Bodhan Estates, Ltd., Beiles Buildings, corner Market and West Streets, Johannesburg.
5484. L. J. Frank Co., Ltd., corner Hanau and Highgate Streets, Jeppe, Johannesburg.
5368. Koster Butter and Cheese Factory, Ltd., 150, Pritchard Street, Johannesburg.
4875. Essapore, Ltd., 18, Barkly Arcade, corner Market and West Streets, Johannesburg.
5309. Anglo-American Corporation of S.A., Ltd., 201, 2nd Floor, The Corner House, Johannesburg.
4950. S. Hirschman and Co., Ltd., 117-113, Stock Exchange Buildings, corner Sauer and Fox Streets, Johannesburg.
4694. John Macanlay, Ltd., 19, Portland House, Commissioner Street, Johannesburg.
4430. Skefko (S.A.) Ball Bearing Co., Ltd., Meischkes Buildings, corner Market and Harrison Streets, Johannesburg.

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THE SOUTH AFRICAN

Mining Journal

AND ENGINEERING RECORD.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal and Engineering Record* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The agreement between the Springs Mines and the West Springs was issued on Friday, and will appear in our next issue. The terms seem fair and equitable to both contracting parties.

* * * *

The statutory meeting of shareholders in West Springs, Ltd., was held on Thursday morning at 10.30 in the Corner House Board Room under the chairmanship of Mr. F. R. Lynch. The share representation totalled 1,261,113. The chairman explained that this meeting was being held to comply with the law and formally place on record the position up to date. Subsequently, at 10.45, the ordinary meeting of shareholders was held, at which the share representation was 1,261,257. Mr. Lynch again presided, and pointed out that as the company was registered so recently as June 14 they had not had much time for development. The agreement in connection with mining facilities with Springs Mines had been entered into, and would be circulated to shareholders at once. Development on the western side of Springs Mines was within about 20 feet of the boundary of West Springs, and he anticipated that their ground would be entered before the end of this month. The report and accounts were adopted and the appointment of Mr. W. L. Honnold as a director was confirmed. The retiring auditors were re-appointed. By a printer's error in our last issue, West Springs, Ltd., was stated to be a private company. This is, of course, not so.

* * * *

A correspondent writes:—"Considerable prospecting is taking place in the Eastern Transvaal, where not only are shot drills prospecting for coal but at least in one instance the eastern extension of the Heidelberg gold field is being looked for. We hear that near Panbult, a station on the Piet Retief railway, about twenty miles south of Amsterdam, some Johannesburg people have several shot drills at work below the Karoo beds trying to find an easterly extension of the Rand formation. The existence of the lower Witwatersrand beds has been known for some time in the neighbourhood of Amsterdam, and the theory is that it is quite possible for another basin or trough of the lower Witwatersrand beds to occur between Amsterdam and Heidelberg. On geological grounds there is no reason why such a basin should not exist, but the whole of the intervening country is so concealed at the surface by Karoo and other newer geological formations that the discovery of such a basin will be attended with considerable difficulty. So far the boring results near Panbult have been kept secret, but it is rumoured that quartzites have been met with and despite the difficulties the indications are encouraging. The line connecting up with the Heidelberg gold field would apparently pass somewhere to the south of Amersfoort, a small town about midway between Ermelo and Volksrust, and where the surface is covered by extensive dolomite flows. The probabilities of finding such a concealed gold field do not seem promising, but from a geological standpoint it may appear possible that parallel with the Swazi formation basins of the lower Witwatersrand beds may exist. There is not much boring activity to be noticed on the various farms taken up for coal between Leslie and Bethal, but we hear that further north, in the vicinity of Steenkoolspruit, a drill is at work in the lower coal measures. In the country lying next the railway from Ermelo to Breyten considerable prospecting has been done of late, amongst the farms proved being Bloemfontein, Mooifontein, Uitgefallen and Sterkfontein. The prospecting operations have been carried out by Natal syndicates, and it is reported that actual mining operations are likely to be commenced at an early date. Immediately to the south-east of Ermelo extensive prospecting operations for coal have also just been concluded. The seam of coal as regards thickness was found satisfactory, but varied considerably in quality, running as high as 26 per cent. in ash. All hopes of being able to find a market for the output have therefore been abandoned."

In connection with the announcement of the voluntary liquidation of Henry Merton & Co., *The Times* learns that negotiations have reached an advanced stage for the transfer to the Central Mining Investment Corporation of Merton & Co.'s interests in two British manufacturing companies which Merton & Co. controlled. The proposed acquisition will result in an important extension of the Central Mining and Investment Corporation's operations in the metal business.

* * * *

All the various coalfields in the Transvaal would seem to have been visited by the influenza scourge, and its course is so varied that it is difficult to keep track of its progress. At least half-a-dozen collieries have had to temporarily close down in the Middelburg district, amongst them being Oogies, Tweefontein, Coronation and Douglas. The other collieries are also working much below their full capacity and may eventually have to close down temporarily also. Even the South Rand Colliery, in the Heidelberg district, despite its isolation, is one of the worst sufferers, whilst again at the Union Collieries, situated in the far away Breyten district, operations were brought to a standstill. There are few collieries indeed where the effects of the scourge are not being felt, but as the various stoppages are likely to be of short duration and the demand for coal has somewhat fallen of late, it is not anticipated that a coal famine will result.

* * * *

In regard to the gold question, interesting testimony was given by Mr. Hennen Jennings before the Committee on Ways and Means of the U.S.A. House of Representatives. He lays stress on the fact that the Allied countries produce most of the gold of the world, the British dominions and the United States, as we have remarked more than once, contributing about 85 per cent. of the total. Russia normally yields 5 per cent. more. Of the gold produced in neutral countries, it may be asserted that the major part of it is won by aid of British capital and by Anglo-American engineers. The enemy countries contribute barely 1 per cent. of the world's gold production. Why should we voluntarily relinquish this advantage by allowing any obstacle to handicap the vigorous exploitation of gold mines? Sir Lionel Phillips's speech on the subject has found a ready response among those operating gold mines in the United States. In Canada similar ideas are fermenting. The Minister of Mines in British Columbia has approved the suggestion that all war taxes be remitted to gold mining companies, that the increased freight-rates be abrogated in favour of low-grade gold mines, and that gold mining be afforded such assistance as is being granted to other war industries. It is evident that the gold mining industry of the world is becoming articulate and is asking for such public national support as it deserves. We have already noted the announcement made on July 13, by the War Industries Board of the U.S.A., that gold mining has been listed as an essential industry, and all reasonable priority on material and supplies used in the production of gold will be given by the Priorities Committee. This action was taken at the request of the Treasury Department. It is noteworthy, also, that at a meeting held this week the London Chamber of Commerce passed a resolution asking the Government to treat gold production preferentially. Mr. H. C. Blyth said the Government had been informed that if they wished the continuance of the supply of gold they must arrange to give the gold producers a better price.

The board of the East Rand Proprietary Mines, Ltd., has recently received the resignation of **The E.R.P.M. Directorate.** Captain J. P. Farrar, a director of the company resident in England, who is represented locally by Mr. W. J. Gau as his alternate. The board is advised that Captain Farrar has addressed a letter to the Press in London announcing his resignation on account of the abandonment of the southern development scheme after scrutinising the official report on the subject. The following cable has been sent to the London Committee for publication:—"Board East Rand received by cable some ten days ago Farrar's resignation. Reason given was that the board had abandoned the southern development scheme from which he differed. Board now understand that Farrar has since written to the Press announcing his resignation and stating reason for it. Any director who differs in policy from the considered opinion of the rest of his colleagues has clearly the right to resign his seat, but the somewhat unusual procedure of publication in the Press requires, in the opinion of the board, a little added explanation. The first point to note is that Farrar, having been unable to study on the spot the very acute problems with which the company has been and is faced has yet had the advantage of having as his alternate director on the board in Johannesburg an engineer of standing, who has had and has taken every opportunity of investigating the position and has realised thoroughly that the policy of the board was the wise one and indeed the only one at the present juncture. Sir Harry Ross Skinner, now a director of the company and formerly for some years its superintending engineer, has recently been here and after studying the position on the spot during the past six months definitely endorsed the necessity of the board's policy. The reasons, in the opinion of the board, that made it necessary to abandon the southern development scheme have been clearly set before shareholders and finally reiterated and summarised in the annual report and the chairman's address at the annual meeting held on the 29th May, which dealt thoroughly with the various aspects of the problem. Since then the position of the low-grade mines of the industry and this mine in particular has grown far more acute. Shareholders are aware that a monthly working profit of £11,000 is required by the East Rand to meet its standing charges for debenture service, interest, phthisis compensation and other items. Working profits for the first eight months of this year have fallen short of above requirements by a total of £50,000 and by the end of the year this encroachment on the funds of the company will, it is feared, have appreciably increased. No more need be said, therefore, than that the problem facing the company is not the abandonment of the southern scheme, which is mainly the cessation of the sinking of a new shaft, but whether it can continue milling or any other operations; in other words, whether it can continue to live. The board feels that notwithstanding the present heavy encroachment on the funds of the company it must continue current operations until the end of this year and then review the position again. This conclusion has been come to in the interest chiefly of its employees, the community, and the State generally, but it also has the hope that at the end of this year some better grade blocks of ore recently developed will be available for stoping which will thus enable the company better to meet its standing charges, anyway for a portion of 1919. Board would cordially invite Farrar to study the problem on the spot and will render him all assistance and every facility."

* * * *

The Minister of Justice, speaking at Potchefstroom recently, referred to the question of lotteries, and stated that hundreds of thousands of **Lotteries or Premium Bonds.** pounds were being sent out of the country. "If it was proved," said he, "that this sort of thing could not be stopped, it would be better to have a State-controlled lottery." The *Star* says that Mr. De Wet's statement suggests two considerations that have been frequently urged by correspondents. In the first place, the problem can be discussed, not in the light of failure to

stop practices that may be illegal, but from the point of view of the benefit to the State of diverting money presently subscribed to lotteries towards the coffers of the State. It would be infinitely better to debate the thing on the basis of a scheme for premium bonds. The advisability will be admitted on all hands of recruiting to the army of contributors to the State, the small investor who, in the usual course of events, is not attracted by Government securities. Advocates of the premium bond system take the view that if money is so freely available for speculation in small sums, it should be made available for national purposes, and that the desire to win a dividend on the money so invested should be employed as a little extra stimulus to investment in Government funds. Were Mr. De Wet to have "plumped" for the premium bond system he would have been assured of a good following, though it is also true that the opponents of the scheme as savouring of "the recognition of gambling" would muster in strength against any such policy. The recent Women's Congress of the S.A. Party passed a resolution in favour of lotteries, and unless we are mistaken, the Provincial Council has asked for powers to establish a Provincial lottery, while support of the principle has been frequently expressed by members of the general public. The *Star* contends that so far from investment in premium bonds being accounted a dangerous spur to a passion for speculation, they are, on the contrary, held to promote thrift. For our part, we would not be disposed to quarrel about the form if the principle of State-controlled lotteries be accepted by the Government.

* * * *

The report of the Eldorado Banket Gold Mining Company for the year ended 31st March last states that the profits on operations amounted to £51,297, which added to £61,698 brought forward makes a total of £112,995. Out

Eldorado Banket.

of this the undermentioned dividends, amounting to £45,000, and the directors' percentage of profits, £1,500, have been paid; also £2,710 has been provided on the advice of the local directors to meet repairs and replacements effected during the year and so maintain the renewals and replacements fund at the sum of £5,000, at which it stood at the beginning of the year, leaving to be carried forward £63,785. The following dividends have been paid: No. 19 of $7\frac{1}{2}$ per cent. (1s. 6d. per share), paid 27th July, 1917; No. 20 of $7\frac{1}{2}$ per cent. (1s. 6d. per share), paid 31st January, 1918; No. 21 of $7\frac{1}{2}$ per cent. (1s. 6d. per share) in respect of current year, paid 31st July, 1918. During the year 48,629 tons were crushed, having an average value of 11.385 dwts. The actual extraction at 93.9 per cent. of the head value continued excellent, although mainly owing to the reduction in the grade of the ore treated it was slightly below that of previous years. The value of the yield amounted to £114,011, which, after deducting working costs, leaves £55,167. Sundry revenue amounted to £838. Working costs showed an increase of 1s. 8d. per ton, due to the rise in the price of stores under war conditions and expenditure on clearing the old main incline shaft when it became obstructed by extensive falls of hanging wall rock. The gold in reserve amounted to 2,325 ozs. valued at £9,765. A considerable amount of development and prospecting was done at the 20th and 21st levels—the deepest part of the mine—but the results were so poor and discouraging that this work was discontinued, and operations underground were reduced to stopping and drawing ore for the mill. Although no additions from development could thus be made to the ore reserves, 28,035 tons were obtained from excess ore, with the result that the reserves at 31st March, 1918, amounted to 31,700 tons, averaging 9.9 dwts., or a decrease of only 20,594 in tonnage and 0.7 dwt. in value. The disappointing results from development in depth appear to hold out practically no hope of making further remunerative discoveries; at the same time no indication of any changes underground that might lead to new ore bodies being found will be neglected. The reserves at the 31st March were equivalent to eight months' milling, but excess ore will naturally necessitate a longer period, though to what extent cannot be definitely estimated.

TOPICS OF THE WEEK.

COAL AND IRON.

The emergence of South Africa as an iron producer lends extraordinary interest to an article in the April *Nineteenth Century*, by Mr. J. Ellis Barker, on coal and iron and the domination of the world. Mr. Barker shows very clearly that "coal and iron are the twin foundations of the modern manufacturing industries and of modern commerce, and they are at the same time the principal sources of national power, wealth, and population and, therefore, of national armed strength. The pre-eminence of the Anglo-Saxon nations and of Germany in the manufacturing industries, in wealth, and in national power is due not merely to racial causes, as is often asserted, but largely, and probably principally, to a mineralogical cause—to the fact that Providence has given gigantic deposits of coal and iron to the United States, to Great Britain and to Germany, and only insignificant deposits to the Latin peoples, both in Europe and America, and to the Slavonic nations. Professor C. R. van Hise, of Wisconsin University, stated in his excellent book 'The Conservation of the Natural Resources of the United States,' published in 1910:

Coal is by far the most important of all the mineral products. Next to coal in importance is iron. These two are of much greater consequence than all the other mineral products together. The existence of extensive coal and iron fields has profoundly influenced modern civilisation. The greatest commercial nations are Germany, England and America, and each has extensive coal and iron deposits. . . . It has been said that the nations that have coal and iron will rule the world.

"The great majority of historians and of political writers have completely neglected the influence of the economic factor upon history. According to popular conception the wars of the past have been caused mainly by the unrestrained ambitions of rulers and their generals, by the intrigues of statesmen and courtiers, by national passions, or by mere misunderstandings. In reality many, and very likely most, wars have been brought about by economic causes, have been wars of competition." Mr. Barker goes on to quote and analyse the coal and iron resources of the different countries of the world and comes to the conclusion that "the German statesmen, the German generals and the German people have become convinced that in the modern world not cotton but coal is king and that coal shares his rule with iron; that the nation which dominates the coal and iron resources of Europe dominates Europe itself industrially, commercially, financially and militarily. The German conception is no doubt correct, and it is worth bearing in mind that at present, and for decades to come, the domination of Europe is equivalent to the domination of the world. Germany, if victorious, may dominate the world not so much owing to her territorial acquisitions in the East and the West as owing to her acquisition of a monopoly of coal and iron on the Continent of Europe. The coal and iron problem is very likely far more important than most political problems, such as the fate of Constantinople and the problem of nationalities. Unfortunately most statesmen and diplomats live in the past. They talk of territories and strategical points and harbours and racial questions as if we were still living in the eighteenth century. Unfortunately, most statesmen and diplomats, and most publicists as well, have not yet recognised that he who dominates the coal and iron industries dominates the world."

ASBESTOS: BRITISH EMPIRE'S RESOURCES.

[From "The Times" Trade Supplement.]

THE chief asbestos-producing countries of the world are Canada, South Africa and Russia. Minor producers are the United States, Cyprus, Italy and Spain. The Russian output since the war is not known, but assuming it to have been maintained at 18,000 tons, the average for the three years preceding the war, the world's output of asbestos in the year 1916 may be estimated as follows:—

	Tons.
Canada	118,246
Union of South Africa	4,009
Rhodesia	6,157
Cyprus	1,099
Total British	129,511
United States	1,545
Russia	15,000
Italy	200
Spain	83
Total foreign	19,828
Total	149,339

According to this estimate the British Empire produced close on 87 per cent. of the world's supplies of asbestos, Canada contributing 79 per cent. The following figures show the imports of raw asbestos into the United Kingdom:—

From	1915.		1916.	
	Tons.	Value.	Tons.	Value.
Canada	17,493	£209,652	12,247	£184,517
Cape of Good Hope	2,713	77,141	3,264	95,882
Natal	320	8,338	30	1,802
Portuguese East Africa*	711	15,187	2,705	77,216
Other British countries†	337	6,498	2,125	59,609
Russia	205	3,960	2,569	74,837
Italy	35	1,581	35	1,186
United States‡	3,304	35,897	3,523	37,251
Other Foreign countries..	404	1,538	214	5,166
Total	25,552	£359,822	26,712	£537,496

*This is Rhodesian asbestos, which is shipped through Beira.

†Chiefly Cyprus.

‡Most of this is Canadian asbestos shipped through the United States.

CANADIAN ASBESTOS.

The highest grades of Canadian asbestos are used for making asbestos cloth and various fireproof textiles, whilst the lower grades are used principally for boards, shingles, roofing felts, materials for electric insulation, and boiler and pipe coverings. Until fairly recently the manufacture of goods from Canadian asbestos had been confined to Europe and the United States, but plant for the manufacture of boards, shingles, etc., is now installed at Lachine, Quebec, as well as plant for making asbestos textiles. The Dominion Royal Commission in one of its latest reports expressed the opinion that all that is needed to enable Canada to retain its position as the premier asbestos-producing country of the world is a continuance of the efforts towards cheapening the cost of recovering the asbestos by improved methods of mechanical concentration and an adequate supply of labour. With sufficient labour and supplies of material it is reckoned that 150,000 tons a year could be produced from the mines. The Canadian asbestos industry was particularly active during the year 1916. Stocks on hand at the end of the year were reduced to a minimum. Production, as usual, was confined to the centres at Black Lake, Thetford,

Robertsonville, Danville, and East Broughton—all in the Eastern townships, Province of Quebec. The total output in 1916 was 118,246 tons, as compared with 106,559 tons in 1915. The sales during 1916 were 136,016 tons, valued at £1,069,444, as compared with 111,142 tons, value £740,285, in 1915. Stocks on hand on December 31, 1916, were reported as only 6,031 tons, as against 24,345 tons on hand twelve months before. Exports of asbestos during 1916 were 96,775 tons, valued at £906,763, as compared with 84,584 tons, value £569,728, in 1915.

AMERICAN DEMAND.

A large proportion of Canada's output of asbestos is exported to the United States for use there or for shipment abroad. The embargo on the exportation of asbestos from Canada to the United States, which was afterwards modified, caused attention to be turned to the deposits known to exist in the States, and it is believed there that, if the embargo had been kept in force, the United States deposits could have been developed within a short time to meet the demand. Canada naturally aspires to become a great manufacturing country, utilising her own great wealth of natural resources. She seeks to become more than a storehouse from which other countries may draw their supplies of raw materials, and she aims at marketing her productions in the more profitable form of manufactured goods. In the case of asbestos, however, it seems likely that she will continue to export the raw material, though no doubt in due course local asbestos manufacturing industries will be established on a sufficient scale to supply the whole of the requirements of the Home market. About four-fifths of Canadian asbestos is low-grade material known as mill stock and mill fibre, and averaging in value about 21 dollars a ton. About 4 per cent. of the whole output is high-grade asbestos, known as "crude," and worth from 200 dollars a ton upwards. The bulk of the low-grade or short-fibre asbestos is exported to the United States and elsewhere, and used in the manufacture of fireproof construction material, such as wall sheets and roofing slate, consisting of a mixture of cement and asbestos in the proportion of 85 per cent. of the former and 15 per cent. of the latter. The heavy freight charges on such material if manufactured in Canada for export would be prohibitive, whilst any restrictions on the export of the raw material would at once stimulate the exploitation of sources of supply in other countries. Only such asbestos goods can therefore be manufactured in Canada for export as consist mainly of asbestos. For the best class of cement shingles Russian asbestos is mixed with the inferior Canadian mill-stock in the proportion of one-third to two-thirds. Cyprus asbestos is also used to improve goods in which Canadian asbestos is mainly used.

SOUTH AFRICAN ASBESTOS.

Two types of asbestos are found in South Africa. Crocidolite or blue asbestos is produced in the Griqualand West district of Cape Colony, whilst chrysotile or serpentine asbestos is found in the Transvaal and Rhodesia. Rhodesian white asbestos is of excellent quality, and competes with Canadian asbestos. The asbestos exported from the Union of South Africa is mainly derived from the Kuruman, Hay and Prieska districts of Cape Colony. A small quantity has been produced in Dundee district in Natal. The exports of raw asbestos from the Union of South Africa (not including Rhodesia) in 1916 were distributed as follows:—

	Tons.	Value.
United Kingdom	3,618	£60,529
United States	288	4,713
Japan	103	3,584
Total	4,009	£68,826

The following table shows the rapid expansion of the output of asbestos in Rhodesia:—

Year.	Tons.	Value.
1913	290	£5,224
1914	487	8,612
1915	2,010	32,190
1916	6,157	99,059

Most of the asbestos from Rhodesia comes from Mashaba, in Victoria district, where two mines are firmly established. It is nearly all shipped from Beira, and appears in the import trade statistics of the United Kingdom as derived from Portuguese East Africa. The demand for Rhodesian asbestos is good, prices have increased, and the industry shows every sign of further progress. Cyprus produces a very good quality of asbestos, and in 1915 exported 1,099 tons, valued at £9,509, from the Amianos Mine at Troodos, in Limasol district. Asbestos is found in various parts of Australia, but so far has not been produced in any considerable quantity. In New South Wales the manufacture of asbestos cement, flat wall sheets, roofing slates, and corrugated asbestos sheets as a substitute for galvanised iron, has been started. During the three years previous to the war, Russia's production of asbestos averaged 18,000 tons a year. Italian asbestos is of a character different from that of the chief producing countries, though it is in some ways similar to Canadian asbestos, and for certain applications can replace the latter. The output averages rather less than 200 tons a year. Spain in 1916 produced 83 tons of asbestos.

ASBESTOS ROOFING SHEETS.

The manufacture of asbestos-cement corrugated roofing and tiles is now carried on extensively in the United Kingdom. The sheeting is made to the same dimensions as corrugated iron sheeting, and as replacements and repairs to a building made of iron sheeting become necessary, these may be made with asbestos-cement sheets of exactly the same size. The material has a much longer life than galvanised iron, as it neither suffers corrosion nor is affected

by weather conditions. It consists of a mixture of cement and asbestos built up in layers, dried slowly, and matured in the open air for some weeks before being sold. The material seems capable of displacing to a large extent corrugated iron sheets for building purposes in course of time.

PERSONAL.

Heartiest congratulations to Sir Evelyn Wallers, the President of the Chamber of Mines, on the honour of K.B.E. bestowed on him by the King.

Cape Asbestos.

The trading of the Cape Asbestos Company expanded so much last year that the factory at Barking had to be extended and additional plant installed. The operations of the associated concerns in Italy and France were also on a bigger scale, and but for exchange fluctuations the return from this source would have risen much higher than it did. The gross profit, after allowing for excess profits duty, was £34,400, as against £32,300, and the net profit comes out at £13,600, as compared with £11,900. Administration expenses naturally exhibit some increase and the depreciation provision has been raised from £5,100 to £7,000, but to offset this nothing is this time written off asbestos estates in South Africa, whereas £2,500 was allocated for this purpose in 1916. The ordinary dividend is 5 per cent., or 2½ per cent. more than last time, when the distribution was a maiden one, and under their participating rights the preference shares also receive an equivalent amount, bringing their total return up to close on 11 per cent., as compared with just on 8 per cent. The appropriation to reserve is again £5,000 and makes the aggregate of that fund £30,000, and £5,900 goes forward, or £1,000 more than was brought in.

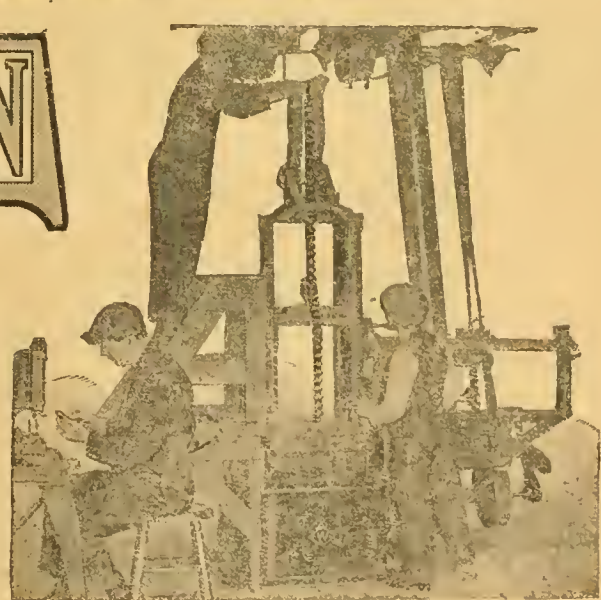


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has withstood a strain almost to its elastic limit. It can do it as often as you please. If you strain it beyond this point it will stretch before breaking. It is the untested chain that breaks suddenly under a partial load. Avoid needless risk.

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KNIGHT CENTRAL: MILLING TO CONTINUE.

THE following circular to shareholders has been issued by the board of the Knight Central, Ltd.:—At the adjourned annual meeting, held on 30th May, 1918, a resolution was passed asking the board to take into consideration the advisability of immediately liquidating the company. In pursuance thereof the board requested the consulting engineer, Mr. E. H. Clifford, to give his recommendations regarding the policy to be pursued by the company in the immediate future. As you are aware, shareholders were notified in June of last year of the suspension of all shaft sinking and the limiting of development to the few points where payable values had been exposed, with the object of milling as long as it was possible to do so profitably, when operations would be suspended. For the first six months of the current year—i.e., to 30th April, 1918—practically no profit was earned. Reference was made by the chairman at the annual meeting to a patch of good Main Reef east of the east shaft, where work was being vigorously prosecuted to render it more available as soon as possible. Since then—namely, for the four months ended 31st August, 1918—profits averaging practically £2,000 per month have been earned. This result is largely due to the ore obtained from the recently developed rich patch of ore previously referred to. The report from the consulting engineer, dated 20th July, was considered by the board on the 6th August, when it was decided that the Witwatersrand Gold Mining Company, Ltd., should be approached to ascertain whether they would entertain the purchase of the claim area adjoining their property, as their acceptance or refusal would guide the board in deciding whether to recommend to shareholders that mining should still continue until such time as profits could no longer be earned, or whether the mine should be closed down forthwith and the plant sold off. In view of this, the consulting engineer has, at the request of the board, furnished a second report, dated September 18th, in which he recommends the

continuation of milling, as there is little doubt that the mine will be able to work at a profit for twelve months, earning about £25,000 during that time, with possibilities of the period being extended. The ore reserves per 30th June quoted by Mr. Clifford include 38,000 tons of ore in the rich patch valued at 9.1 dwts. over 78 inches, but excludes 90,000 tons not fully developed, which is estimated at a value of 7.4 dwts. over 78 inches. Taking into consideration the somewhat improved outlook as detailed in Mr. Clifford's report, the company's inability to now dispose of the claim area containing the best reserves in the mine, the board has decided not to recommend the immediate liquidation of the company, but to proceed with milling operations as long as profits can be earned. If, as pointed out at the annual meeting, some assistance should be forthcoming on the lines of the report of the Union Parliament Select Committee to enable low-grade mines to close down, the board would consider whether or not to take advantage of any financial assistance which could thus be secured.

Leeuwpoort Tin.

The report of operations for the quarter ended 30th September, 1918, is as follows:—Stamps, 17 (including 2 Nissen); time run, 84.43 days; tons crushed, 11,169 short tons; concentrates won, 273 long tons. Average assay value of concentrates is 61.16 per cent. metallic tin. Average price of metallic tin on which the quarter's revenue has been determined is £328 3s. 3d. per ton. Estimated profit, £27,023 17s. 3d. Net adjustments in respect of previous shipments, £429 6s. 3d. Profit declared for quarter, £27,453 3s. 6d. Capital expenditure: The sum of £7,024 6s. 2d. has been expended for machinery, buildings, shaft sinking, etc. During the quarter a sum of £2,233 16s. for development redemption has been included in working costs.

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New Water Hammer Drills to supersede Reciprocating Drills.

The "Hydromax" weighs 90-lbs. It is Suitable for Stopping, Raising and Driving.
Low Air Consumption. It drills 30% faster than any other drilling machine.

No Mine Manager can afford
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'HYDROMAX'

The Fastest Rock Drill
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We have exclusively manufactured drills for thirty-seven years and the "HYDROMAX" is our crowning effort.

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THE SEPTEMBER GOLD OUTPUT IN DETAIL.

Decrease of 32,004 Ozs. Owing to Influenza.

THE gold output for the Transvaal for September was declared on Thursday by the Chamber of Mines at 708,206 ozs., valued at £3,008,267, being a decrease of 32,004 ozs., and in value £135,944, on the August return. The decrease practically was entirely due to the dislocation of operations on the Witwatersrand due to the influenza epidemic. Randfontein Central had a normal month's working, with the result that the value of the output shows an increase of £11,150 on August. The Witwatersrand output was 686,963 ozs., the decrease on the August return being 32,886 ozs., and the outside districts, with 21,243 ozs., showed a slight increase of 882 ozs. The aggregate figures were:

Total output	708,206 ozs.
Value	£3,008,267
Decrease	32,004 ozs.
Value	£135,944
Witwatersrand	686,963 ozs.
Value	£2,918,032
Decrease	32,886 ozs.
Value	£139,691
Outside Districts	21,243 ozs.
Value	£90,235
Increase	882 ozs.
Value	£3,747
Stamps	8,884
Increase	5

INDIVIDUAL RETURNS.

	Value.	Increase.	Decrease.
Bantjes Consolidated	£25 329	£2,073	—
City and Suburban	27,627	—	£4,864
City Deep	100,280	—	5,799
Con. Main Reef	71,731	—	2,621
East Rand Proprietary	112,034	—	24,985
Ferreira Deep	54,940	—	13,903
Geldenhuis Deep	55,348	1,071	—
Modder Deep	85,108	—	598
New Kleinfontein	75,567	—	1,185
New Modder	170,241	4,393	—
Robinson	43,119	—	6,609
Village Deep	66,350	—	4,804
Vogelstruis Estate	1,784	1,784	—
Aurora West	15,653	—	607
Crown Mines	220,865	—	6,129
Geduld Proprietary	63,682	—	1,793
Jupiter	28,800	—	3,865
Knights Deep	70,449	—	3,364
Meyer and Charlton	38,527	—	3,330
New Goch	15,406	—	1,474
Princess Estate	22,666	—	2,825
Robinson Deep	51,737	—	12,748
Roodepoort United	21,472	—	3,437
Simmer and Jack	64,774	—	6,210
Simmer Deep	42,341	—	4,817
Van Ryn	36,258	760	—
West Rand Consolidated	34,746	—	2,035
Wolhuter	38,752	—	238
Brakpan	87,558	—	7,744
Con. Langlaagte	53,194	—	3,046
Ginsberg	13,007	—	207
Government Areas	202,952	1,019	—
Knight Central	33,043	—	489
Langlaagte Estate	61,027	—	705
Luipaardsvlei	21,400	—	1,886
Modder B.	114,935	—	399

P.O. Box 3807.

ROCKWOOD PRESSED STEEL UNIONS

H. ALERS HANKEY Sole Agent.

	Value.	Increase.	Decrease.
New Heriot	16,197	—	522
New Primrose	15,861	—	739
New Unified	12,021	—	760
Nourse Mines	54,609	—	2,217
Randfontein Central	175,270	11,150	—
Springs Mines	86,683	—	863
Village Main Reef	31,573	2,722	—
Witwatersrand	40,052	—	1,172
Wit. Deep	36,429	—	2,221
Durban Roodepoort	722	—	650
Van Ryn Deep	97,940	—	7,238
Glencairn	12,688	—	1,007
Durban Roodepoort Deep	35,719	—	4,367
Miscellaneous	5,361	—	5,858

OUTSIDE DISTRICTS.

Sub Nigel	28,889	829	—
Barrett	1,291	255	—
T.G.M.E.	26,124	2,243	—
Glynn's Lydenburg	8,975	—	332
Miscellaneous	24,956	752	—

LABOUR FIGURES.

The number of natives employed on the last day of the month by the W.N.L.A. and contractors was:—

On gold mines	179,399
On coal mines	12,108
On diamond mines	4,889
Total	196,396

Unused Stone Crusher Spares FOR SALE.

MARSDEN 12 in. x 8 in.

Comprising:—

- 30 Crusher Jaws.
- 5 Toggle Plates.
- 3 Toggle Blocks.
- 5 Small Side Plates.
- 7 Cushions, back swing jaw.
- 7 Cushions, front connecting rods.
- 4 Cushions, back connecting rods.
- 1 Pin, back connecting rod.
- 3 Pairs Brass Bushes, top of connecting rod.
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RECENT PROGRESS IN RAND MINING AND METALLURGY.—II.

Presidential Address Read Before the C. M. & M. Society.

[By H. S. MEYER, M.I.M.M., A.R.S.M.]

VENTILATION AND DUST.

A word must be said on the subject of ventilation and prevention of dust. These subjects are being given constantly increasing attention, with conspicuous success, and underground conditions, therefore, show steady improvement. Large sums have been spent on ventilating fans and various appliances for circulating fresh and cool air; the subject of the scientific ventilation of mine workings is more difficult than generally realized, and more study and care will have to be exercised in the control of air currents before anything like perfection can be said to have been attained.

SANDFILLING.

Sandfilling of worked-out areas continues on a more moderate scale; the use of this process could be extended with advantage, particularly in mines near the centre of the town, with the object of improving the value of the surface. As long as such land is so frequently affected by local underground falls, it can scarcely be considered attractive from a business or residential standpoint. Apart from this, the removal of large sand dumps would free a considerable surface area of some value, and certainly improve general living conditions in their neighbourhood. It may be noted that the cost of sandfilling through boreholes has been reduced to a very small figure. The subject of hoisting is more in the province of the mechanical and electrical engineer; it may be mentioned, however, that the tendency is to deal with heavier loads at a moderate hoisting speed. At present hoisting through circular shafts is done in trucks and cages; as, however, there is no particular object in handling the ore carefully, it is quite certain that we shall in the near future see skips running on rope guides or rails, instead of the conventional cage, which will be reserved for handling men and materials.

TIME-SAVING UNDERGROUND.

The subject of the expeditious handling of the underground working force is one which present circumstances are forcing us to specially deal with. The mines, particularly on the Far Eastern Rand, cover very large areas, the workings expand very rapidly, and become every day more remote from the main shafts. The reduction in underground working hours to 48 hours a week makes it highly important that every minute spent below the shaft collar should be given over to productive work, and that the energy and time of the worker should not be unduly wasted in travelling long distances in the mine on foot. Up to date, little has been done in the direction of moving people underground by mechanical means, and there are numerous restrictions against this method, *i.e.*, against the appliances which are available to-day. I have no doubt, however, that rapid improvement in this direction can be looked for, as well as in improving the means of moving about in mines which are not necessarily large in extent but present numerous natural difficulties against reasonably easy and safe travelling conditions.

METALLURGICAL PRACTICE.

Pass now from mine to surface, and turn to the preparation of the milling product, where in a number of cases we reach "no man's land." In my opinion, the metallurgist should take delivery of the ore at headgear. He is on the whole inclined to take it in the mill bins. Between these two stand the crusher and sorting stations, which as often as not seem to be regarded as an impediment, preventing the direct delivery from headgear to battery. I have yet to see this important department given the attention it merits, and placed directly in charge of a man of understanding. There are still some who insist that the quartzite and slate forming the walls and partings of the gold carrying portion of the reef mined, which is generally

known as waste, and is given away to the Municipality and contractors for road making, is capable either of earning a profit or in an indirect way assists in increasing the profit of a mining company. To my mind, one can equally well claim to draw blood from a stone or turn lead into gold; or it may be expressed in another way, *viz.*, "That which has nothing in it is dear at a penny." However extreme you may consider my personal views, there can be no doubt that with a few exceptions, the metallurgist is using his brains and efforts to extract gold from a large quantity of material which originally contained less of value than the residue he finally consigns to the dumps. On the Witwatersrand, it may be said that as an invariable rule no mine has started production without an adequate ore reserve. The characteristics of this reserve were known in absolute detail, *i.e.*, the width of the gold-bearing blanket, the width of the intermediate waste partings as well as the width of external waste which could reasonably in practice be expected to be broken to successfully remove the valuable blanket. Fair estimates are also procurable of the probable percentage of valueless material which reaches the surface in a condition for subsequent rejection. Granted this, it is only reasonable to expect that the whole design of the crushing, sorting and milling plant should be based on mining conditions. Were this the case, I could not accuse you of crushing and cyaniding enormous tonnages of valueless road metal, and of stating in good faith that you obtain 96 per cent. extraction out of nothing. Given well designed and properly controlled crushing, screening and sorting plants between headgear and mill, the existing metallurgical equipments erected on the Rand to-day could, I have no hesitation in stating, produce far more gold and profit for a very limited expenditure on improvements in the direction indicated. The position, however, is that most plants have not been designed on this basis, and consequently many mines are found to be overstacked and consequently overmanned. They then become so inelastic that they are unable without most drastic methods to adapt themselves to the altered conditions brought about by complete changes in underground conditions. There seems little chance of shaking off our heritage, but one may be excused for expressing the hope, that the many new plants we expect to see erected in future will be designed in such a way that they can be adapted to meet the possible changes in geological conditions which cannot be foreseen at the time of their erection. I can see a plant of the future where the stamp battery, instead of being the most important means of comminution, is the least. Fines will be by-passed direct to tube mills; double stage crushing and sorting

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enables the tube mill pebbles to consist entirely of valuable blanket, a maximum amount of waste is discarded and the stamp battery has only to deal with the relatively small quantity of indeterminate material. The battery could always be extended to suit any improvement in the proportion of reef to waste. Metallurgical efficiency has now reached a point where there is little scope for improvement in extraction, and any advance must take the form of design rather than practice. Alterations must therefore be somewhat revolutionary, and aim at a reduction in capital cost rather than operating expenses.

Gentlemen, my original intention was to review very briefly some of the technical features of this industry which I hoped would interest you, and I find myself introducing subjects which, to say the least, are controversial. For this I must apologise, and at the same time point out that sufficient matter has been touched upon to indicate the lines on which interesting papers could be written, and I ask those of you who are specialists in some of these subjects to come forward with your views, so that the matters can be discussed in the friendly, free, and professional style which this Society has ever encouraged.

TRAINING OF MINERS.

Although we are proud of our School of Mines and its influence on technical training, it occurs to me that many whose, intention is to qualify as mining engineers are not sufficiently acquainted with the Government Miners' Training School, and to the good results obtained from it. It will be remembered that the Government decided in 1911 to establish a Government Miners' Training School in order to provide the South African youth with the necessary means, under the most favourable conditions, for obtaining a course of training in what must be recognised as a skilled trade, viz., mining. The scheme has considerably expanded, and there are schools at the Wolluter and Bantjes Mines and one in course of erection at Modder B. Young men of good physique and reasonable education and qualifications, between the ages of 16 years and 25 years, are accepted as apprentices for underground work for a period of two years, during which period a progressive wage is paid as follows: First six months, 4s. 3d. per day; next six months, 4s. 6d. per day; next six months, 4s. 9d. per day; next six months, 5s. per day. Apart from wages there is a scale of bonuses, so that the industrious apprentice is able to add materially to his wage. From the wages earned a certain amount is deducted for board and quarters, medical and benefit society, and recreation fund, and the apprentice is left with £2 or £3 pocket money per month. After completion of his two years' apprenticeship, the apprentice receives preference over all other candidates for employment on the mines, at a wage of not less than 16s. 8d. per shift. I think you will agree with me that such an opportunity, and under such conditions, for learning a skilled trade, is unique in the world of industry. At the end of August there were 188 apprentices on the books of the schools; many have already completed their training and are now occupying remunerative and responsible positions on the mines. Now the point of importance to those who contemplate giving their sons the training of a mining engineer is this. Whilst the boy is young and hefty he has in the Training School a unique opportunity of learning in practice the roughest part of mining, and doing that part of the practical and dirty work which few men have the grit to

undertake later in their careers. Instead of young fellows commencing their careers as junior samplers and surveyors. I offer the advice that they should learn the practical side whilst their bodies and mind are adaptable. They always have a trade to fall back upon, and there is no restriction to their future progress.

THE MINERS' UTOPIA.

There is just one more subject of a more general nature that I must mention before concluding. Our Hon. Vice-President, the President of the Chamber of Mines, has been brilliantly successful in bringing employer and workmen into closer touch, and a basis of mutual understanding has been created equal to that known in any other industry the world over. My observations compel me to the opinion that the give has all been on one side. From the employee's standpoint, the Witwatersrand can well be called "The Mining Utopia." Is he, however, giving a fair return for these exceptional conditions? I am in a position to follow efficiency returns from a large number of mines, which, taken as a whole, can safely be regarded as representing average conditions along the Reef; the disconcerting feature revealed by such figures is, that in spite of unlimited expenditure on improved appliances, on lavish living conditions, on better educational and training facilities, and finally on higher wages, there is no evidence of improved efficiency. Is it, therefore, too much to ask the mine worker of whatever grade to show some consideration for the employer, and to endeavour to give a little in return for benefits which cannot be equalled in any other mining camp in the universe?

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THE MINING INDUSTRY OFFICIALLY REVIEWED.—V.

Some Extracts from Annual Reports of Inspectors of Mines.

Salt.—The Vaal River Salt Works, Ltd., continue to produce salt in large quantities from their works at Britten.

Surface Support.—Some of the mines in this district have the misfortune to be traversed by one or more public railways or roads which cross the property where the workings are at such a shallow depth that special precautions require to be taken for the support of the surface. It is a matter of extreme difficulty to estimate precisely what amount of support should be afforded where the surface is undermined and where the workings will eventually become abandoned and inaccessible. The regulations require that permission must first be obtained before mining is carried out under or near surface objects which it is necessary to protect. When permission is granted, it is subject to certain conditions which the manager or owner is called upon to fulfil. These conditions are, as far as possible, standardised, and in some cases suggestions of the managers for obtaining added security are accepted and embodied. When these conditions are put into practice, however, it is frequently found that, on account of some unforeseen happening or geological condition they are not, in that particular instance, applicable, and we sometimes have the experience of a manager appealing for relief from a condition which he himself suggested and which he has found to be irksome. Some of the mines have been put to a very great deal of trouble and expense by reason of these safety requirements, but, on the whole, I am able to report that the conditions have been well and faithfully carried out and where difficulties have been encountered in matters of detail the manager concerned has approached the Department with a view to arriving at an alternative method.

Accidents.—A consideration of the year's accidents naturally leads to the reflection, what is being done to reduce this long list of casualties? It is becoming more generally realised that it is not by occasional visits of inspectors, with the consequent round up of victims, that improvements in the safe working of the mines are to be obtained, but by the unceasing vigilance of those who are in continual touch with the workings and workmen. The growth of this feeling has led to a better understanding between the mines and the Department, and, where a manager gives thought to the welfare and safety of his workmen, he not only assists the Inspector in his inquiries and inspections, but instructs his officials to report all matters which are liable to make for unsafe conditions. In some cases managers have gone so far as to form committees of workmen, or workmen and officials, for the set purpose of discussing means of preventing accidents and of investigating complaints. In this district such committees were formed, although looked upon with a considerable degree of suspicion and jealousy by the various unions, have obtained remarkable results in the way of promoting contentment amongst the workers, preventing accidents, and dealing with grievances often before such even reach the ear of the manager. Committees of this description are invaluable to the manager, since they eliminate friction and relieve him of a great burden of responsibility. For reasons above referred to, however, they have to work in the face of tremendous opposition, though such opposition would naturally weaken as the committees increased in number. There is little doubt that the better understanding above referred to between the mines and this Department has been the cause of the gradual and marked improvement which has taken place in the condition of the underground workings of the mines, both as regards health and accidents. It would be an everlasting pity if the growth and expansion of that feeling were to be arrested and the old conditions of mutual distrust, suspicion, and dislike reverted to. Yet such appears more than probable unless discretion is used. There are people who consider that a manager is *ipso facto* a criminal or in the nature of a mutinous small boy and must be treated as such in all communications, verbal or written. Any instruction must be in the form of a mandate hedged round by threats of dire pains and penalties, and the inspector must convert himself into a detective, to ascertain whether his orders are being carried out.

There certainly have been managers in the past, who, on account of misunderstanding, have laid themselves out to baulk and hoodwink the inspector, and with very complete success too; and there probably are officials to-day who are doing the same thing to a small extent, but it is so obvious that those delinquents are becoming fewer, and the majority of managers not only have a sense of honour, but also have enough intelligence to see that methods making for safety and health are in their own interests. A little more of the conciliatory spirit would possibly not come amiss, and an amicable discussion of ways and means before issuing instructions (which after all are often merely a matter of opinion) would probably have a much more far-reaching effect than an irritating and possibly unsuitable command.

The shortage of skilled labour doubtless has a more marked effect on the accident-rate in this district than is the case elsewhere, since the mines are consistently poor and unable to compete for labour with their neighbours on the Central and Eastern Rand. Good men who have stayed on at this end of the Reef are only awaiting an excuse to quit and go eastward. When they go their places have to be filled with whatever class of labour offers. Any man with a blasting certificate is taken on immediately without reference to the question as to

whether the applicant is suited to the work for which he is engaged, or any other work for the matter of that, in many cases. There is probably a larger percentage of inefficient workmen on the West Rand than in any other district. This fact, combined with the present sensitiveness of the unions and the uncertainty of the outcome when a real or fancied grievance is put forward, makes the lot of the mine official a most difficult one, and he has to use a great deal of tact, and often must overlook small offences or ask as a favour the performance of some duty which he has a right to demand. Consequently, supervision is not always as strict as it should be.

The number of explosives accidents decreased by twenty-four and the deaths resulting by twelve. There has been a most gratifying decrease in the number of such accidents at Randfontein. In 1916 there were thirty-three accidents and twenty-nine deaths at that property from this cause, whilst during 1917 there were only fifteen accidents resulting in eleven deaths. This marked improvement is probably traceable to the more general installation of water-pipes in all stopes, which permits of a thorough washing of the benches and consequently a more minute examination being carried out for misfires and sockets. There is also an increase in the number of backstopes being worked at that property. This method of working gives added facilities for the detection of misfires. The number of accidents from fall of rock also shows a decrease, being seventeen less than in 1916 with sixteen fewer deaths. Unfortunately, the Randfontein Central Mines show an increase of five in the number of deaths, the figure being thirty-four killed as against twenty-nine for 1916. The remaining mines in the Witwatersrand area of the district only accounted for seventeen deaths from this cause between them, which is extremely satisfactory.

Much has been written about the dangerous nature of the hanging-wall in the Randfontein Mines and the necessity for the most scrupulous care on account of the steepness of the workings, and suggestions have been made from time to time for improved methods. Unfortunately, alterations in methods of working generally mean additional cost over a long period, and where a mine is working on a nominal margin of profit, or is struggling to get out of the condition where losses have been incurred, it is questionable whether the enforcement of additional safety precautions are justified where the possible saving of a few injuries might result in the closing down of the mine and throwing out of employment a large number of workmen.

It would be unfair to say that the Randfontein management has not tried by every reasonable means to reduce the number of accidents. The trouble lies to a large extent in the unsatisfactory class of labour available. This Department has preached backstopping year in and year out. The Randfontein management has tried it. The men do not understand it and will not learn it, and rather than be taught they give up their jobs and quit. In spite of this the management has persevered, because in certain parts of the mine it is the only possible method of working the reef. The natives object, because in the underhand stopes where they have been used to working they had straight down holes, and they could sit in comfort and put a hole in by lifting and dropping the hammer. Consequently, they felt they had a grievance when shifted into a backstope, and declined to exert themselves, so that no efficiency could be obtained, and sectional managers said if they could not get better efficiency than was shown by these experiments they could not undertake the method or they would have to close down. The method is still being persevered with and new gangs are being started and broken in in backstopes, so it is hoped that success will be attained eventually.

(To be continued.)

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THE SEPTEMBER GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of September:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
Bantjes Cons. ...	90	3	20,150	5,963	£1,171	23/ 6-0
City Deep ...	A154	10	52,500	23,608	30,416	25/ 8-8
Cons. Main Reef	220	6	48,400	16,887	9,623	25/ 1-9
Crown Mines ...	660	26	156,000	51,926	33,091	23/ 5-3
Dur. Rood. Dp..	100	3	24,200	8,409	1,007	28/ 0-1
East Rand Prop.	600	23	93,000	26,374	*19,694	27/ 5-9
Ferreira Deep ...	280	7	36,400	12,934	9,653	24/ 2-4
Goldenhuis Deep	300	7	47,900	13,030	*1,736	23/ 4-5
Knight Central ..	120	3	24,500	7,779	3,563	23/ 5-5
Modder B. ...	B104	8	57,000	27,058	58,434	19/ 0-7
New Modder ...	c236	15	72,000	40,079	90,191	21/ 3-1
Nourse Mines ...	180	5	40,600	12,856	1,779	25/ 5-5
Robinson ...	180	6	36,400	10,151	5,255	20/ 3-6
Rose Deep ...	300	7	48,600	12,761	7,993	18/ 6-8
Village Main R.	130	4	20,800	7,433	7,062	22/ 10-4
Wolhuter ...	120	4	32,150	9,123	5,031	20/ 9-8
Village Deep ...	180	7	44,200	15,620	5,642	26/ 10-6
Wit. Deep ...	200	5	29,000	8,576	352	24/ 4-2

Tls. & averages 4154 149 883,800 310,567 248,833 23/ 6-9

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.

C Includes 56 Nissen stamps.

* Loss.

Bantjes Consolidated Mines, Ltd.—Improved results solely due to cleaning up sweepings from old stopes which cannot be maintained.

East Rand Proprietary Mines, Ltd.—Results have been adversely affected by the influenza epidemic, the effects of which will also be felt this month. Tonnage affected by accident at Hercules shaft, which suspended operations in that section for two weeks. Recovery grade good considering average ore reserve values. Outlook to end of year unsatisfactory, but hope to maintain grade with improved tonnage output between now and December 31, thereby showing less loss than present month. Recent development has shown improvement in some sections, which are, however, widely separated. Technical advisers hope by end of year to stope from good ground in these sections and hope for improved grade. Operations will be continued to end of year, when position will again be reviewed with a view to ascertaining whether anticipated better grade will be substantially successful in meeting the company's standing charges, estimated at £11,000 per month for debenture service, Government annuity, and other standing charges. Operations for year will show considerable encroachment on the company's cash resources.

General.—Results generally have been adversely affected by the influenza epidemic, the effects of which will also be felt this month.

Glynn's Lydenburg.

The following are the particulars of the output of Glynn's Lydenburg:—Tons crushed, 4,201, yielding 2,112 fine ozs. Estimated value of month's output, £8,782. Estimated profit for the month, £3,529.

Transvaal G.M. Estates.

The following are the particulars of the output of the T.G.M.E. for September:—Central Mines: Tons crushed, 11,950, yielding 4,532 fine ozs. Elandsdrift Mine: Tons crushed, 1,530, yielding 981 fine ozs. Vaalhoek Mine: Tons crushed, 1,860, yielding 635 fine ozs. Estimated value of month's output, £25,830. Estimated profit for the month, £6,067.

Barnato Group.

The results of operations of the Barnato group for September are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	39,000	£53,194
Ginsberg ...	75	13,500	13,009
Glencairn ...	160	19,600	12,688
Government Areas ...	200	117,500	202,953
Langlaagte Estate ...	200	49,290	61,026
New Primrose ...	90	18,000	15,860
New Unified ...	60	12,400	12,023
Randfontein Central ...	600	158,000	175,272
Van Ryn Deep ...	90	45,400	97,940
Witwatersrand ...	215	35,000	40,053

Totals and averages ... 1790 507,690 £684,018

August totals ... 1790 498,020 £686,722

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ..	£40,351	20-693	£13,016
Ginsberg ...	12,272	18-180	815
Glencairn ...	12,314	12-565	555
Government Areas ...	115,883	19-725	87,604
Langlaagte Estate ...	44,615	18-103	16,550
New Primrose ...	14,399	15-999	1,532
New Unified ...	9,577	15-446	2,481
Randfontein Central ...	154,767	19-591	21,294
Van Ryn Deep ...	48,549	21-387	50,030
Witwatersrand ...	34,532	19-733	7,002

Totals and averages ... £187,259 19-195 £200,879

August totals ... £504,865 20-275 £186,281

Monthly Gross Profit for 1918.—January, £190,628; February, £159,225; March, £136,496; April, £164,186; May, £179,975; June, £180,141; July, £188,103; August, £186,284; September, £200,879.

Goerz Group.

Results of operations on the producing mines of this group for the month of September:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	43,000	£64,564	30/ 0
Modder Deep Levels ...	70	41,300	84,898	41/ 1
Princess Estate ...	60	19,200	23,031	24/ 0

Totals ... 230 103,500 172,493 —

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£14,783	20/ 10	£19,781	9/ 2
Modder Deep Levels ...	37,147	18/ 0	47,751	23/ 1
Princess Estate ...	27,106	28/ 3	*4,075	4/ 3

Totals ... £109,036 — £63,457 —

* Loss.

Note.—The above results, particularly those of the Princess Estate, Ltd., have been adversely affected by the outbreak of Spanish influenza.

New Kleinfontein.

The following are details of the operations at the New Kleinfontein:—Stamps, 250; days, 22; tube mills, 8; tons milled, 55,740; gold recovered, 17,790 fine ozs.; net value, £73,830; profit, £2,512; working costs per ton (excluding development), £1 2s. 11d.; development to working costs per ton, 2s. 8d.; total working costs per ton, £1 5s. 7d.; capital expenditure, £1,856.

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Consolidated Mines Selection Group.

The following are the results of operations for the month of September:—

	Stamps Working.	Tons Milled.	Working Cost per Ton Milled	
Brakpan Mines	110	51,000	25/	0 007
Springs Mines	80	39,100	23/	2 530
Totals and averages ...	190	90,100	24/	2 686
	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines...	£87,930	34/ 5 791	£21,179	9/ 5 784
Springs Mines ...	85,701	43/10 040	40,324	20/ 7 510
Totals & averages	£173,631	38/ 6 503	£64,503	14/ 3 817

Albu Group.

The September operations of the producing mines of this group were as follows:—

Company.	Stamps.	Tons Crushed.	Total Cost.
Aurora West	80	13,600	£14,937
Meyer and Charlton ...	75	11,480	15,835
New Goch	80	16,650	15,865
Roodepoort United ...	80	22,000	25,608
Van Ryn Estate	140	33,400	28,921
West Rand Consolidated ...	100	29,080	33,790
	555	126,210	£131,956
Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	21 96	£15,452	£515
Meyer and Charlton ...	27 58	37,933	22,098
New Goch	19 06	15,940	75
Roodepoort United ...	23 28	21,478	*1,130
Van Ryn Estate	17 32	35,968	7,047
West Rand Consolidated ...	23 24	34,585	795
		£161,356	£26,400

* Loss.

The September operations of all the mines of the group were more or less affected by the disorganisation of work consequent on the epidemic of Spanish influenza. This disorganisation will also affect the outputs for October, but to what extent it is impossible to estimate at present.

Roodepoort United.—This mine was particularly affected by the prevailing epidemic, as shown by the decrease of approximately 4,500 tons in the ore milled.

West Rand Consolidated.—The results were also adversely affected by the breakdown of the pumping plant in the Rand shaft in the early part of September.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of September of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit
Simmer and Jack ...	320	7	55,500	14,599	£12,059
Robinson Deep ...	90	7	38,200	12,180	*1,456
Knights Deep	400	11	83,100	16,585	1,077
Simmer Deep	220	10	42,100	9,968	*2,169
Jupiter	80	5	25,200	6,780	2,349
Sub Nigel	30	2	9,600	6,561	9,380
Totals	1140	42	253,700	66,673	£18,240

The sundry revenue included in the above total declared profit is as under: Simmer and Jack, £1,500; Robinson Deep, £288; Knights Deep, £394; Simmer Deep, £550; Jupiter, £615; Sub Nigel, £11; total, £3,358.

Gold Reserve.—Simmer and Jack, 2,050 ozs.; Knights Deep, 341 ozs.; Sub Nigel, 3,231 ozs.; total, 5,622 ozs.

Robinson Deep results were adversely affected through shortage of native labour and difficulties in connection with the change over to the Chris shaft; also through influenza troubles. The operations of Knights Deep and Simmer Deep were curtailed through minor accidents and also through influenza troubles.

New Heriot.

The operations of the New Heriot for September were: Ore milled, 12,300 tons; gold recovered, 3,813 ozs.; loss, £978. The loss was due to continued low grade and disorganisation resulting from influenza epidemic, which will also affect this month's results.

City and Suburban.

The following are details of the operations of the City and Suburban for September:—Tons milled, 17,005; gold recovered, 6,504 fine ozs.; loss, £1,009. Loss due to low tonnage milled; hoisting interrupted for four days for shaft repairs. Latter end of the month work disorganised by influenza epidemic. Next month's results will be affected.

Mashonaland Agency.

The report of the Mashonaland Agency for the year ended 30th September, 1917, states that profit was £19,794. The directors recommend a dividend of 9 per cent., less tax, for the year, of which the final 3 per cent. will be paid to holders registered 31st instant. Land holdings, which are now 465,529 acres, had a total area of 454,103 acres, against 440,511 acres in 1916. Ten thousand acres have been offered to the British South Africa Company for ex-service settlers. Ranching land comprises 177,072 acres, and in addition 130,004 acres are conveniently situated for an extension. Progress of ranching programme has been satisfactory. Number of cattle at 1,125 has increased 1,210. Income from rentals of farm lands was £1,843. Stands were 61, 15 having been sold at satisfactory prices. These 61 stands appear at £6,859. Buildings stand at £7,690. Net rental from stands and buildings was £2,795. Investments stand at £55,922, which is cost price or under. Their estimated value exceeded £100,000. The following are the more important holdings:—Bwana M'Kubwa Copper, Gold Fields Rhodesian Development, Kimberley (Mashonaland) Gold, New Rhodesia District Development (in liquidation), Rhodesia Broken Hill Development, Rhodesia Chrome Mines, Rhodesia Copper and General Exploration and Finance, Rhodesia Lead and Zinc Syndicate (Debentures), Rhodesia Metals Syndicate, Victoria Falls and Transvaal Power (shares and debentures), Wankie Colliery (shares and debentures), and War Loan Five per Cent. 1929-1917.

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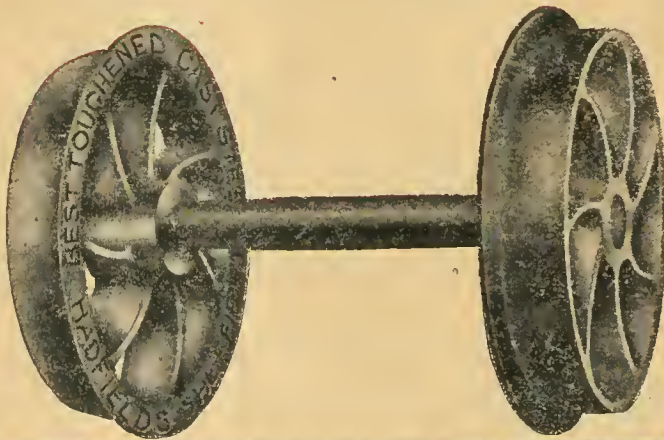
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THE WEEK IN THE SHAREMARKET.

Shrinkage of Business—Fall in Prices.

SATURDAY's business was uneventful from first to last. There was a recovery in Leeuwpoots, which had gone weak on the previous day and during the morning a slackening in African Farms, which closed at 17s. 3d. There was a better demand for Geduld Props, which finished at 38s. 9d. On Monday the Stock Exchange was closed for one of the usual statutory holidays. At Tuesday's call a waiting policy was pursued and there was little or nothing doing. There was an advance in Modder Bs., all the other stocks being about the same as on Saturday. The market was dull throughout the day with a lower tendency, especially in Leeuwpoots, which fell to 31s. 3d. Wednesday brought no relief. A forced sale of Africans brought the price down to 17s. 1d. The rest of the list was mostly a series of trifling setbacks. At the close Africans made 17s. 6d. and New Modders £27 2s. 6d. Thursday's opening was confined to Alkali, which reached 50s. The volume of business on call showed a considerable shrinkage and a further falling in values, with the solitary exception of New Modders, for which a buying bid of 2s. 6d. more than the last sale price was made. There is no doubt that the influenza epidemic is mainly responsible for all the trouble. Very little was done in outside stocks during the week, the only quotations and dealings being:—Sales: Makganyene Diamonds, 31s. to 37s. 6d. for odd lots; Monteleos, 24s.; Sakalavas, 10s. Buyers and sellers: Makganyenes from 31s. up to 40s., buyers; Union Tins, 5s. 5d., buyer; Union Mica, 9s. 6d., buyer.

The call was held at 9.30 a.m. on Friday, but it had not the effect of stimulating business, as less than a dozen sales were recorded, mostly at lower prices. The following are the alterations in quotations:—Sales: Glynn's Lydenburg, 23s. 9d.; Geduld Props, 38s. and 38s. 3d.; Government Areas, 91s. 9d.; Hume Pipes, 34s. 6d.; Lydenburg Farms, 9s. 2d.; Springs, 71s. 3d.; Alkalies, 48s. and 48s. 6d.; West Springs, 24s. 9d. Buyers and sellers: African Farms, 17s. 2d.—17s. 5d.; Crown Mines, 37s. 6d., buyer; Consolidated Langlaagte, 19s. 3d.—20s.; East Rands, 4s. 6d.—4s. 9d.; New Modders, £27 6s. 3d., buyer; Kleinfonteins, 13s. 6d.—14s. 3d.; Zaaiplaats, 16s. 3d.—16s. 6d.

	Fri. 4th	Sat. 5th	Tues. 8th	Wed. 9th	Thurs. 10th
Daggafontein Options	—	4 3*	—	4 3*	4 0*
Durban Roodepoort Deeps	—	7 6*	7 6*	—	7 6*
East Rand Coals	2 0*	2 0*	2 0*	2 0*	2 0*
East Rand Minings	18 6*	19 6*	18 9*	19 0*	20 0†
East Rand Props.	—	3 9*	3 9*	3 9*	4 6
East Rand Debentures	£63*	£63*	£63*	—	—
Eastern Golds	1 3*	1 3*	1 3*	1 3*	1 3*
Ferreira Deeps	—	—	—	8 0*	—
Frank Smith Diamonds	3 5*	3 5*	3 5*	3 5*	3 5*
Geduld Props.	37 0*	38 9	38 3	38 0*	37 6
Glencairns	1 6*	1 6*	1 6*	1 6*	1 6*
Glynn's Lydenburg's	23 0*	23 6*	23 6*	23 9*	23 6*
Government Areas	92 3	92 9	93 0	92 3	92 0
Hume Pipes	35 0	34 0*	35 6	34 6*	34 6*
Jupiters	—	3 9*	4 0*	4 0*	4 0
Klerksdorp Props.	3 0A	3 0*	3 0*	3 0*	—
Knight Centrals	—	4 5	4 3*	4 4*	4 5
Knights Deeps	—	5 0*	5 0*	5 0*	6 0†
Lace Props.	12 8	12 9	12 7	12 0	11 9*
Langlaagte Estates	20 0†	—	20 0†	—	—
Leeuwpoot Tins	32 6	32 6*	34 0	31 6	31 6
Lydenburg Farms	9 5	9 3	9 4*	9 1*	9 3
Main Reef Wests	—	—	—	2 10†	—
Middelvlei Estates	1 0*	1 0*	1 5*	1 0*	—
Modder B's	168 0	168 0	169 0†	166 0*	165 0*
Modder Deep	148 9	150 0*	148 0*	148 6*	149 0*
Modder Easts	21 4‡	21 7‡	21 6*	21 3*	21 4‡
Modder Options (3 years)	6 6*	6 6*	6 7	6 4*	6 6*
Modder Options (4 years)	7 8†	7 6*	7 7*	7 7	8 0†
South Van Ryn	14 6	14 3*	14 3*	14 3*	14 3†
South Van Ryn Options	1 3*	—	1 3	—	—
S.A. Alkali	45 0	43 0*	45 0†	45 0	49 0
De Beers	£16*	£16*	£16*	—	—
Natal Navigation Collieries	—	19 0*	19 0*	19 0*	19 0*
National Banks	£14*	£14‡	—	—	£14*
New Boksburgs	—	—	—	1 0*	1 0*
New Eland Diamonds	—	23 6*	23 6*	—	23 6*
New Era Cons.	10 3*	10 3*	10 3*	10 3*	10 3*
New Geduld Deeps	—	5 9*	6 0†	6 0†	5 8*
New Heriots	12 6*	12 6*	—	13 0*	13 0*
New Kleinfonteins	14 6	14 6*	14 6	15 0†	14 0*
New Modderfontein	—	£27A	—	£27*	£27‡A
New Unifeds	—	5 6*	5 6*	—	5 6*
Nigels	4 0*	4 0*	—	—	—
Nourse Mines	18 6	19 0†	18 0*	19 0†	17 6*
Premier Preferreds	—	145 0*	—	—	—
Pretoria Cements	71 6*	—	72 6†	71 6*	72 6A
Princess Estates	3 8	3 3*	3 6	3 3	3 0*
Rand Collieries	2 6*	2 6*	—	2 6*	2 6*
Rand Klips	10 3*	10 6*	10 6	10 3*	10 0*
Rand Nucleus	1 3*	1 4	1 3*	1 4	1 3*
Rand Select Corporation	90 0†	90 0†	—	—	87 0*
Randfontein Deeps	—	5 0*	5 0	5 9	5 6*
Randfontein Estates	15 0*	15 0*	15 3*	14 9*	14 9*
Rooibergs	11 6	11 6*	11 3*	11 6	11 0*
Roodepoort Uniteds	2 6*	2 6*	2 6*	2 9*	—
Ryan Nigels	3 0*	2 9*	2 9*	2 9*	2 9*
Shebas	—	—	—	1 0†	—
Simmer and Jacks	4 6†	—	—	—	—
S.A. Breweries	33 0*	33 0*	33 0*	33 0*	33 0*
S.A. Lands	6 9	6 7*	6 7*	6 9*	6 8*
Springs Mines	71 6	71 9*	71 6*	71 6	71 0*
Sub-Nigels	28 0A	27 6*	27 9	27 7‡	27 6*
Swaziland Tins	—	32 0*	32 6†	32 6†	—
Transvaal Lands	21 0	21 0*	21 0*	21 0*	—
Transvaal G.M. Estates	—	16 0†	—	—	12 6*
Van Ryn Deeps	71 6*	72 0	72 0†	71 6	71 0*
Village Deeps	16 6*	17 6*	16 3*	—	16 6*
Village Main Reefs	10 0*	—	—	—	—
West Springs	25 9	25 3*	25 7‡	25 4‡	25 0*
Western Rand Estates	2 3*	—	2 0*	2 0*	2 0*
Witwatersrand Deeps	9 9	9 6*	9 9*	9 9*	9 9*
Wolhuters	4 0†	—	4 0†	4 0†	4 0†
Zaaiplaats Tins	17 0	17 0*	17 1	16 6	16 5*
Union 5 per cent.	£105‡	£105*	£105*	£105*	£105*
New States	20 7‡	20 9	20 9A	20 6	20 6

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Business Bad—Speculators Much Concerned Over Peace Notes—Quotations Erratic—Big Parcel of Steel Distributed—Electrical Material—Chemicals and Disinfectants.

BUSINESS is quieter than ever, partly through the influenza scourge, as on that account no fewer than six collieries have closed down, and the others are only working about one-third their strength. Another reason is the German peace note, which created a sensation amongst speculative holders on Tuesday and in a lesser degree since. The fact is that during the first two years much speculation has taken place in Johannesburg. For example, so many people with money have gone into things that they never touched before. Picture frame dealers have bought prints and such like, a solicitor is said to be holding a hundred cases of turpentine for a rise, and fair quantities of petrol are held by a few suburban people which can be had at about 70s. per case to one's friends. Again, white lead and linseed oil are held by tea merchants and others, and household brushware by jewellers, also a nice parcel of tin plates has been purchased by a cork merchant as well as rosin by furniture dealers. To illustrate the anxiety on Tuesday, before the replies were sent to Germany, no less than seven travellers called on an oil and colour warehouse offering, or perhaps to be more correct, "fencing" the subject as to what they could get for certain lines. However, not a line was struck, as the manager concerned was neither a buyer or seller, preferring to await events.

QUOTATIONS THAT ARE AND MIGHT BE.

The lowest quotation made for raw linseed oil was 10s. 6d. per gallon in bulk, of which there are big supplies, but not so for the boiled description that remains firm at last quotations. In the case of linseed oil, providing the bar against export was removed from Britain, both kinds,

viz., raw and boiled, could be landed here at 5s. 8d. per gallon, as compared with its present price of 14s. to 15s. Hence the natural anxiety of the speculative holders. This is not altogether improbable, as here and there the prohibited exports from Britain do come through. For example, there are 21,000 empty new tins on the way here from England at a cost of 1½d. each as compared with the local manufactured price of about 4½d. each. Hence it is not surprising that holders of tin plates held for big profits have been a little frightened of late. Again, paraffin has been offered from Natal at a price which had better not be mentioned, seeing that fines of £20 and £15 respectively were inflicted by the Johannesburg magistrate on Wednesday for selling bottles at 1s. and 9d. each, which is 6d. and 3d. above the Government regulation price. Undoubtedly there is an easier tendency in prices, more particularly in second-hand machinery; however, the idea is that this will wear off somewhat, now there is no prospect of immediate peace. The shake up for speculative holders has been sharp and severe.

IRON AND STEEL.

Business in the bar iron trade is still fairly good, but quieter, through the influenza chiefly. There is a great dearth of imported bar iron, and the local manufactories are not giving the general trade over much, as they are kept well employed by the Government and mine orders. The

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mines are evidently making more use of their reserve supplies, as one mine alone recently distributed 600 tons of octagon, hexagon and cruciform drill steel. There is a reason for this, viz., that the mine in question had turned their hammer drill work into that for machines. In mentioning this matter an expert in this line said that some mines had two or three years' supply of drill steel of all kinds and in the aggregate there was over a year's supply on the mines. It is not surprising that business is in the doldrums on the Exchange, now that the chief buying office is moving surplus stocks rather pronouncedly from one mine to others.

THE TREND OF BUSINESS.

One of the best authorities says that where there were all buyers before the Bulgarian surrender and the peace note, now there are ninety sellers and ten buyers. The substantial houses are neither buying nor selling, but are always open to buy anything a trifle under market value; however, at present there are very few bargains offering, and although there is an easier feeling, yet one cannot really put a hand upon any alteration in prices, as the fractions are so small that they are unquotable. A manager remarked that he was not relieving anyone of their surplus stocks at present prices, excepting in the ordinary way of business to complete orders. Business in commercial circles is very dull, simply because of the influenza epidemic, which is not surprising now that many of the schools are to be turned into hospitals. The oldest inhabitant cannot remember such a sad time as this; for although the fever in the early days was bad, yet it was nothing like the present scourge.

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price during the present year. All electrical supplies are quite fair but business is exceptionally slack. It was surprising to hear at one place that no less than four small jobs arranged for last week were held up this week, as the various owners, all seemingly with one accord, were waiting to see what was likely to happen over the peace business.

CHEMICALS AND DISINFECTANTS.

Mercury has now gone down to £35 per 75 lb. bottle, but very little is doing as mines have contracted for supplies until the end of the war. Disinfectants, especially imported, are scarce, but fortunately there are quantities manufactured locally, chiefly from tar. The price is 10s. per gallon



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imported, and 5s. for the locally made. Quinine is scarce, having risen from 3s. 6d. to 5s. per oz. Eucalyptus is being used very freely owing to the influenza, and stocks are being absorbed quickly. There is still a fair quantity made locally, but with the present extra demands that hardly counts. The price has advanced about 20 per cent.

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GREASE.—Imported, A.F. axle, £40; local, £31 to £31 $\frac{1}{2}$ per ton; tallow (local), 8 $\frac{1}{2}$ d. per lb.; paraffin quotations unobtainable; petrol, 39s. 2d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 47s. 6d. per case; cylinder, 37s. 6d. to 47s. 6d.

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Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—V.

Lessons for South Africa—The Electrification of the Chicago, Milwaukee and St. Paul Railway.

THE following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E.:

It is in my opinion vital that, in considering the best equipment of system for any initial section of the S.A. Railways which may be selected, the final possibilities should be rigidly held in view. Speaking purely generally, not having considered the subject, suppose a 2,400 volt D.C. system, with sub-stations every 25 miles, was economically suitable and proper for the section from the Natal coalfields to the coast, can one imagine sub-stations at 25 mile intervals strung out between Johannesburg and Bulawayo, or Johannesburg and the Cape. To my way of thinking it is absolutely unimportant that the system adopted for main line electrification should also be suitable for suburban traffic, but essential that all main line traffic be identical and interchangeable. It is a perfectly simple matter for the main line locomotives to knock off when the suburban boundaries are reached, and the train to be handled thereon to the terminals, by locomotives suitable for the particular system adopted for the suburban traffic. What I am getting at is this—that whereas I am convinced that D.C. equipments are essential for any electrification such as the Reef section, or for purely suburban passenger traffic, I am by no means convinced that it is of necessity the best solution for the long distance main line traffic conditions that have to be met in this country. On the other hand, as previously stated, I must admit I have given no detailed consideration to the subject, and am only speaking on general principles and in of course quite a personal capacity. Some particulars of the passenger locomotives the Westinghouse Co. are supplying to the Chicago, Milwaukee and St. Paul Railway will be of interest, as many new features are embodied. They are designed to haul a trailing load of 950 tons, 12 coaches, over the entire mountain section from Seattle to Harlowton, a distance of 684 miles, at speeds varying from 56 miles per hour on the level to 25 miles per hour on the 2 per cent. grades. The classification of the locomotives will be 4-6-2-2-6-4, articulated, corresponding to two-coupled locomotives of the Pacific type, but the whole of the auxiliary and control apparatus is concentrated in a single cab, carried on the two main trucks, each main truck having, as is apparent from the classification, a four wheel guiding truck, three driving axles and a two wheel trailing truck. The arrangement of the cab is such as to relieve it of all pulling and bumping strains, due to the train load, which are taken direct through the truck side frames and buffers. The motor equipment consists of six twin motors, gear driving on to the wheels through a quill. This arrangement makes for great flexibility of running speed. Three economical speed combinations result, namely, with six motors in series, with two sets of three motors in series, and with three sets of two motors in series, giving one-third, two-thirds and full speed respectively, and further, with each of these combinations, two additional running speeds are obtained without rheostatic control, by means of inductive shunts on the main motor fields. The use of twin motors, which I believe were first employed on the New York, New Haven and Hartford freight locomotives, enables the available space between the driving wheels to be most effectively utilised, and also in this case permits of armatures wound for 750 volts. The regenerative control presents some special features, one being that the separate excitation necessary is obtained from special axle driven generators with balancing resistances. These machines are mounted on the inside axles of the guiding trucks of the locomotives, and in addition to exciting the main motors during generation, also supply power for the air compressors and blowers when

the locomotive is running. In addition to relieving the trolley of a certain amount of load, this arrangement presents the advantage that if, for any reason, power was off the trolley, the train could still be safely taken down these heavy grades on air brakes. It is recognised that a low voltage for auxiliaries very materially adds to the general reliability. On these locomotives all the auxiliaries are operated at a normal pressure of 100 volts, there being provided for this purpose a small motor generator set and a battery consisting of 36 Exide cells, in addition to the axle driven generators just mentioned. Some leading particulars of the locomotives are as follows:—Length over couplings, 90 ft.; fixed wheel base, 16 ft. 9 in.; total weight in tons, 266; weight on driving axles, 165 tons; diameter of driving wheels, 68 in.; diameter of guiding wheels, 36 in.; trolley voltage, 3,000; normal operating motor voltage, 750; number of motors, 6 twin; one hour rating of motors, 666 h.p.; continuous rating of motors, 535 h.p.; total rated h.p., 3,200/4,000; starting tractive effort, 112,000 lbs.; normal maximum speed, 56 miles per hour; h.p. per ton of locomotive one hour rating, 15. Amongst other advantages claimed for these locomotives, special mention may be made of the following:—Inherent advantage of lower voltage across the individual motor. Greater safety of train operation, with power for compressors independent of main power. Reduction in peak demand due to greater flexibility in operating speeds. Material saving in rheostatic losses for the same reason. Better wheel arrangement and weight distribution. Higher centre of gravity, with complete spring support of main motors. These latest locomotives are illustrated in figure 3. A very brief comparison between these locomotives and the locomotives described by Mr. Kirkland may be permitted. The one hour rated capacity is 11 per cent. greater, and this is obtained with a reduction in overall length of 22 ft., nearly 20 per cent., and a reduction in total weight of 22 tons, say, 7½ per cent., the h.p. per ton of locomotive being increased by 19 per cent. I have no desire to emphasise these figures in any way, because there is no doubt I think that the G.E. locomotives described by Mr. Kirkland were designed chiefly with a view to heavy freight traffic, but they do, I think, exemplify that steady progress towards improvement, which is such a marked feature in all those spheres of usefulness in which electricity find an application. Reference has been made to the very important New York, New Haven and Hartford electrification, which is claimed to be one of the largest and most important trunk line electrifications in the world. There are at present in service about 100 Baldwin-Westinghouse locomotives, operating from an 11,000 volt single-phase, 25 period trolley line, with the complication of having to operate off a 600 volt D.C. third rail when running on the 12 miles of the New York Central Lines entering the Great Central Station, New York. Three types of locomotives are in service, namely, passenger, freight and switching locomotives, details of the three types being given in the following table:

	Passenger.	Freight.	Switching
Type of truck articulated ...	2-4-0	2-4-0	0-4-0
Rigid wheel base ...	8ft. 0in.	8ft. 0in.	7ft. 0in.
Total wheel base ...	68ft. 4in.	40ft. 6in.	23ft. 6in.
Over all length ...	75ft. 3in.	50ft. 0in.	37ft. 0in.
Height to cab roof ...	12ft. 3in.	13ft. 10in.	12ft. 6in.
Diam. of driving wheels ...	62in.	63in.	63in.
Total weight ...	435,200 lbs.	219,450 lbs.	159,120 lbs.
Weight on driving axles ...	41,900 "	42,200 "	39,780 "
Continuous tractive effort ...	12,500 "	13,000 "	14,600 "
One hour rating do. ...	19,400 "	18,600 "	23,200 "
Maximum tractive effort ...	40,000 "	40,000 "	40,000 "
Maximum speed, m.p.h. ...	66	27-8	8-1

These passenger, freight and switching locomotives are illustrated in Figs. 4, 5 and 6 respectively.

(To be continued.)

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Company Meetings.

CORONATION COLLIERIES.

The ninth ordinary general meeting of shareholders of the Coronation Collieries, Ltd., was held at the National Bank Board Room on Oct. 4th. Mr. A. Aiken presided, and there were also present Major Hon. W. L. Bagot, Messrs. J. Waldie Peirson, W. P. Grimmer, J. F. Rutherford, B. Price, and A. L. Tiegoning. The accounts disclosed a profit for the year, ending June 30th, 1918, of £35,607 7s. 10d.

The Chairman, in moving the adoption of the report of the directors, said that last year he discussed the position of the Transvaal coal traffic as affected by the war. The collieries were all far inland, and depended entirely on the railways to haul their product to the consumers. Their customers were mainly in two areas—the Witwatersrand and the ports of Delagoa and Capetown. Notwithstanding the increasing difficulties in obtaining new supplies of rolling stock, or even materials for repairing the old engines and trucks, there was again an advance in the coal traffic to record, on which he congratulated the Railway Administration. It was a bigger achievement than a year ago appeared to be possible, when one considered the rapid diminution of shipping and the extreme shortage in the supply of nearly all the metal manufactures on which the railways were dependent. The recent returns of shipbuilding justified the hope that the Allies had turned the corner, and were replacing every ton sunk by enemy submarines, but it was questionable whether that would mean more so far as South Africa was concerned than that the existing state of shipping would not become worse. The arrival of ships in South African ports was not only scanty, it was also very erratic. They could always get previous intimation of arrivals, so that the difficulties in supplying shipping with coal when required were accentuated. It was, generally speaking, a case of a heavy pressure or no business at all at their chief port—Delagoa Bay. The outlook for next year, if the war continued, was quite uncertain, as might be expected from the explanations just given. Shipping trade was of supreme importance to the Trans-

vaal collieries. It was only if the shipping demand grew that the collieries could continue to expand. Internal requirements were not growing fast, and it would need considerable industrial development to make much difference to the collieries, whilst that development could only very gradually come to pass. The shipping trade, on the other hand, offered far greater opportunities for expansion, and it was accordingly in their interests to nurse and encourage it in every possible manner. The war had opened up outlets for their coal through shipping which were denied to them a few years ago, and they were hoping to be able to retain a considerable share of such trade in the future. Their coal had been tried in these new quarters, and they trusted it had established a sufficient reputation to justify its use in competition with other coals when normal trade conditions were re-established. That had a direct bearing on another matter which had been occupying the attention of the Board for a considerable time. In view of the comparatively short period of productivity left to them in the old Coronation Mine, they had been losing no chance of securing a satisfactory property to replace it. At the present moment they were testing three different areas, after having considered and rejected several others. It was impossible to say yet whether any of those now being examined would prove acceptable. Several conditions had to be fulfilled before any property could be considered satisfactory. It must be accessible, that was, not far from the railway. The seam must be of a workable width—indeed, as thick as possible—and it must be clean coal if possible, that was, unmixed with shale or other partings.

The Native Strike.

During the past year there had been one new experience which was both disappointing in itself and disquieting for the future. He referred to the five separate occasions on which the natives employed on collieries in the Witbank district had suddenly and by pre-arrangement downed tools. So far as could be gathered, the boys suffered from no serious grievances. The complaints they put forward to the Native Affairs officials pointed in one respect to a mis-

understanding over the system in vogue at most of the mines of giving a differently coloured ticket for broken shifts. Another real grievance they alleged was that the meat rations issued consisted partly of inferior stuff. That, of course, was indefensible. If a company undertook to supply meat, the issue ought to be sound meat. In so far as these native strikes were concerned, the companies must be rigidly honest and just to their employees. Otherwise trouble and loss would not be long to seek. It was all the more necessary to deal fairly with the native in that a new spirit appears to be growing up amongst the black races in South Africa. They were evincing dissatisfaction with their old conditions under which they had been treated as children with no industrial acquirements and no education. They were in most parts of the country showing the greatest eagerness for the benefits of elementary and in some cases of even higher education. Sooner or later the kaffir would demand more consideration, and a higher rank in life and justice would insist on receiving it.

The white employees had also during the year put forward demands for higher pay. Agreements had been arrived at with the South African Engine Drivers' and Firemen's Association, the Amalgamated Society of Carpenters and Joiners, the South African Boilermakers, Iron workers' and Steel Shipbuilders' Society, and the South African Mine Workers' Union. They were now discussing a draft agreement with the Stationary Engine Drivers, Locomotive Drivers, Boiler Attendants and Firemen. In connection with the white as with the coloured employees, the only condition on which good relations could be looked for was that of a square deal and fair play. There was no reason to think that either party to these negotiations had any desire adverse to the establishment of such a square deal. In conclusion, he mentioned that with the Tavistock Company the Board was giving £450 to the Governor-General's Fund spread over the year.

The motion was carried unanimously.

The retiring directors, Messrs. A. Aiken and H. de V. Steytler, were re-elected. Messrs. Roberts, Hays and Co. were reappointed auditors for the ensuing year.

"The Journal of Industries"

The place of honour in the September number of the *Journal of Industries* is given to an article on Concrete Shipbuilding, by Mr. Warrington Smyth, Secretary for Mines and Industries. Mr. Smyth says that, for cargo carriers of over 2,000 tons, the advantages of ferro-concrete are still very doubtful, but that, for the coastal trade of the African continent, an opening for ferro-concrete may be said to exist, whilst there is no reason why all demands for lighters for the ports should not be met by this material. He points out that our opportunities for opening up and securing the coastal trade of Africa, south of 5 deg. N. lat., are such as they have never been before, and after the war will never be again; and that, with the excellent cement now being produced in the Union and the Cape, and the large amount of granite available for the aggregate, together with the experience already gained in reinforcement work, there should be no difficulty in turning out and utilising the right material.

The possibilities of the commercial use of aircraft in South Africa are discussed by Mr. J. H. Neal, of the Technical College, Durban. The author is a Fellow of the Aeronautical Society of Great Britain, and consequently is able to speak with some authority on the subject. Although the article reads almost as a scientific romance, Mr. Neal's arguments are convincing, and there seems no reason to doubt that the time is not very distant when, as the author suggests, there will be daily aeroplane services, for passengers as well as mails, between Capetown, Johannesburg and Durban.

Other articles in the "Journal" include an outline by Dr. W. M. Flint, Librarian of Parliament, Capetown, of what has been done in the organisation and development of research and industry in Can-

ada; a description by Mr. H. Wolfe, of the Department of Agriculture, of certain European systems of rural credit and their applicability to South Africa; a study by Dr. Marchand, the Acting Chemist of the Department of Agriculture, of sources of potash fertilisers; an illustrated resumé of the Grain Elevators Committee's report; an investigation of the effect of the colour bar in industry, as reflected by the results of the industrial census; and a brief survey of the Union's limestone resources.

There are also a dozen pages of useful "Notes," and the usual "Notes from Industrial Centres," survey of the labour market, weather notes, tables, etc.

The "Journal" is issued by the Department of Industries, Pretoria, and copies are obtainable from any railway bookstall.

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Notes and News.

The serious effect of the influenza epidemic is likely to be seen very clearly in the returns of the gold mines this month. Though the native workers have been affected to a surprisingly small extent, compared with what has happened at Kimberley, some individual mines have suffered badly. The white employees of the mines have also been largely affected, and at the middle of the week the Crown Mines had no less than 200 white men put out of action. The relatively small proportion of natives attacked on the Crown Mines is doubtless due to the inoculation again pneumonia on that property. Up to Thursday there had been between six and seven hundred deaths of natives on all the mines from the epidemic, and considering the size of the native labour force this compares most favourably with the ravages made by the disease at Capetown and Kimberley. The medical and sanitary organization of the N.R.C. and W.N.L.A. on the mines are to be congratulated on the figures.

* * * *

The largest shipyard in the world is now in operation and nearing completion. It is situated at Hog Island, just outside Philadelphia, on the Delaware River, U.S.A. It covers nearly 900 acres, and has been placed well inland, away from possible enemy attack. There are now no fewer than 50 slipways, which extend for a mile and a quarter along the river front. There are also seven out-fittings piers, each 1,000 feet long, and these extend for another mile of frontage. Each pier can efficiently berth four ships at a time for fitting out. Consequently the lay-out of the plant makes it possible to build 50 ships at a time, and simultaneously to fit out a further 28. Two types of standard ships are being built, namely, 7,500 ton cargo vessels, and 8,000 ton combined troop and cargo boats. When the yard is in full swing one large ship will be launched every second day. Nine months ago the site was virgin soil. The first keel was laid 4½ months after the work on the yard began, and the first launch is anticipated next month.

* * * *

At the annual meeting of the Rezende Mines, Ltd., recently, Mr. S. R. Jameson, the consulting engineer, referred to the difficulties confronting the mining industry, due to the present price of gold, and stated in so many words that the position created by the slump is rapidly limiting production. Mr. Jameson estimates that the cost of stores supplied to the Rhodesian mines has risen about 50 per cent. above their pre-war value, and we should imagine that this is a moderate estimate. On the Rand the burden has grown by over five millions sterling per annum.

* * * *

The Johannesburg Inspector of White Labour in his report on the month of September gives the following comparative figures in regard to the Labour market:—Applications for employment, 165 in September, against 161 in August; applications from employers, 118 and 81 respectively; employment found, 100 and 81. The Inspector states that in regard to mining there was a large drop in the number of applicants, with an increase in the vacancies offering and the number sent to employment. A few vacancies for underground men was not filled. As to engineering, there was a slight drop in the number of applicants and a slight increase in the numbers required and placed. The building trade showed a decrease in the number of applicants for employment, while the number of vacancies remained the same as in August. The Department had not been able to supply 50 per cent. of the labour required. The only other material change was the increase shown in the demand for work from unskilled labourers. The Inspector proceeds: "As stated in last month's report, the number of unskilled labourers who register at the Bureau is only a small portion of the number available were employment offering. I think a much greater interest would be taken in

the question of unemployment if all classes of workpeople could be induced to make use of the Labour Bureaux and to continue in attendance until employment was found for them. Employers might also be induced to use the offices to a greater extent; in many instances we have suitable men on our registers for whom employers are searching through the medium of the press. Generally speaking there are very few men of experience, or with special training or ability, out of employment, the large majority of the unemployed are those who can do anything, which means nothing requiring any degree of skill or training."

* * * *

We are asked to correct the statement by our Trade Correspondent in our last issue that "the mines

Drill Steel: are evidently making more use of their
A Correction. reserve supplies, as one mine alone recently distributed 600 tons of octagon, hexagon and cruciform drill steel." An unqualified denial is given to the foregoing by the chief buying office, and we much regret having given currency to what proves to be an incorrect rumour.

* * * *

The following circular was sent out to the shareholders of Fraser & Chalmers on Aug. 26:—In the **Fraser & Chalmers' circular of the 15th March last, Future.** addressed to the shareholders, a preliminary statement was made regarding the negotiations then in hand with the General Electric Company, Ltd., for the sale of the Erith works, together with the manufacturing business and the goodwill attaching thereto, excepting the mining machinery business. The retention of the mining machinery business was found, on drafting the sale agreement, to present so many difficulties in definition that a modification of the whole basis of the sale had to be adopted. The agreement, which is now completed, provides for the transfer to the General Electric Company, Ltd., of the entire works of Fraser & Chalmers, Ltd., at Erith, and all the manufactures hitherto conducted therein, together with the goodwill. The increased amount now payable in respect of goodwill, patents, patterns and drawings, which do not appear as assets in the company's balance sheet, is fixed at £110,000. This extension of the sale originally contemplated, while reducing the value of the business retained by the company, has correspondingly increased the sums payable for work in progress and goodwill. The scope of the company's operations in future is now limited to the merchanting business. As a result of this limitation the directors had to reconsider the position and future activities of the company, particularly with reference to the South African branch, where very large stocks of machinery and merchandise have been carried in past years. The directors have now received from responsible parties an offer for the purchase of the whole of the South African business and stocks, together with the merchanting business in South Africa, as at 30th June, 1918, at a price substantially in accordance with the value standing in the books of the company; and they have accepted this offer subject to the preparation of a satisfactory agreement giving effect thereto. When this sale is completed the company will then be left with only the stocks of its branch offices in Australia, Canada and elsewhere for disposal. The sale of the two portions of the company's business referred to has involved difficult and protracted negotiations. The amounts to be paid for the Erith works and the South African business involve intricate questions of accounts and valuations. For this reason the total sum to be received by the company has not yet been ascertained, and in all probability cannot be ascertained for some time to come. It has, therefore, been impossible for the directors to convey to the shareholders any precise or definite estimate of the final result of these two transactions. They feel, however, it is desirable to communicate to them this further explanation of the position and to ask their forbearance until such time as they can place before them in general meeting an accurate statement with regard to these sales and their recommendations with regard to the further policy to be adopted.

The London secretary of Simmer Deep, Ltd., gives notice of a meeting to consider the suspension of the redemption of the first debentures during a period of five years. The interest on the debentures is guaranteed by the Consolidated Gold Fields of South Africa, Ltd., up to September 30, 1931, and would be paid half-yearly, as hitherto. The circular states that the financial position of the company has been seriously affected by the increased cost of working due to the war and to labour shortage; but, as the grade of the present ore reserves and of current developments is satisfactory, it is hoped that it will be possible to carry on profitable mining operations. In order to avert liquidation or the immediate danger of closing down, it is essential that the redemption both of the first and the second debentures should be suspended and payment of the interest on the second debentures postponed. A meeting of the second debenture holders has been called for the purpose of obtaining their consent to a similar period of suspension and also to the postponement of the payment of their interest during such period, and the sanction of the first debenture holders will be subject to the condition that the second debenture holders agree to this proposal.

* * * *

In view of the importance of preventing wastage in pit-timber, the British Department of Scientific and Industrial Research has issued a **Preservation of Pit-Timber.** bulletin in which Mr. Percy Groom suggests preventive and remedial measures against decay. He points out that the fungi, which are for the most part responsible for the decay, often clothe the surface of the wood with a fluffy or cotton-like material (spawn) which rapidly spreads, and also produces fructifications that emit spores which, conveyed through the air, may alight on and attack other wood. Colliery timbermen should be taught to recognise the spawn and fructifications, and, starting from the intake, and travelling with the air currents to the return ways, they should periodically inspect the timber. Every fructification should be removed by cutting away the portion of wood to which it is attached, and should then be placed in a pail, carried to the surface, and burnt. For dealing with the spawn the men should carry a swab, cloths, and a pail containing an antiseptic solution; the antiseptics suggested, in order of preference, are creosote and its various derivatives, zinc chloride, and copper sulphate, though the last should not be used where the mine-water is rich in iron. All the accessible wood should be washed with the solution, and the spawn removed. In this way the growth of spawn over the surface would be checked and its transference to other parts of the mine prevented. Preventive methods depend on rendering the wood immune to infection by fungi, through coating or impregnating it with the antiseptic.

* * * *

The Minister of Mines and Industries has been pleased to approve of the amalgamation of the **The New Advisory Board of Industry and Science.** Industries Advisory Board and the Scientific and Technical Committee. The amalgamated body will be known as the Advisory Board of Industry and Science, and members of the Industries Advisory Board and of the Scientific and Technical Committee will be members of the Advisory Board of Industry and Science. The Minister has been pleased, also, to approve of the following nominations: C. G. Smith, Esq., Chairman of the Industries Advisory Board, as Chairman; Bernard Price, Esq., M.I.E.E., Chairman of the Scientific and Technical Committee, as Deputy-Chairman; E. Chappell, Esq., C.B.E., Vice-Chairman of the Industries Advisory Board, as Deputy-Chairman. All communications to the Advisory Board of Industry and Science should be addressed to the Secretary (A. C. Marsh, Esq.), Room No. 155, New Law Courts, Johannesburg.

* * * *

Mr. E. H. Bulman has resigned the management of the New Kleinfontein mine, and Mr. Harding has been appointed acting manager, under the supervision of the consulting engineer, Mr. E. J. Way.

TOPICS OF THE WEEK.

AN IMPERIAL ENQUIRY INTO GOLD PRODUCTION.

ANOTHER stage in the discussion of the gold question is marked this week by the appointment of a Committee by the Imperial Treasury "to consider the effect of the war upon the Empire's gold production, particularly as regards low-grade ores, and generally the means whereby gold production may be stimulated." The Committee, according to Reuter, consists of Lord Inchcape, Sir Thomas Elliot, Sir Chas. Addis, and Mr. W. H. Goschen. Lord Inchcape, who will be better remembered as Sir Eric Mackay, is chairman of one of the great English banks and head of one of the largest shipping combines in the United Kingdom. He has also been prominent in Indian affairs and for many years sat upon the India Council in London. Sir Thomas Elliot is the Deputy Master and Comptroller of the Mint. Sir Charles Addis is well known as the London manager of the Hong Kong and Shanghai Banking Corporation; and Mr. W. H. Goschen is a member of the banking family of that name, so distinguished in British public finance. With the exception of Sir Thomas Elliot, all are members of the Currency Committee appointed nearly a year ago by the Treasury, but from which no report has yet been published. The personnel of the Currency Committee was much larger, and included such well-known economists as Prof. Pigou, who is Professor of Economics at Cambridge, and, doubtless, like his distinguished predecessor, Prof. Marshall, inclined to support the Quantity theory, which, put briefly, is that there should be no interference with the closing down of the low-grade mines if they do not pay. If—as seems likely—the new Committee, which it will be seen, consists of bankers and Treasury officials, inclines to the same view, it is plain that the Rand can hope for little aid as a result of its deliberations. The fact that it has come into being at all is doubtless due to the persistency of the efforts of those who represent the gold mining industry in London, and one is inclined reluctantly to describe its mission as mainly of a "shelving" nature. It is noteworthy that, according to latest advices from America, the Government there has appointed a similar Committee of Enquiry, with Mr. Hennen Jennings at its head. The constant decrease of the amount of gold produced in that country has spurred the Government to take cognizance of a situation that mining men have foreseen for several months. The U.S. Government officials now realize that gold mining is not a non-essential industry, and that a continued decrease in gold production might result in actual peril to Federal credit. Recently, all the large gold-producing companies of the United States received a telegram from the Bureau of Mines seeking accurate information regarding the present status of the gold-mining industry. The telegram is as follows: "The committee formed by the Secretary of the Interior to study the gold situation asks your earnest co-operation, and requests that you prepare to provide promptly a complete yearly statement for the last five years, showing detailed operating costs, number of tons treated and the recovery; also production and costs for the six months of 1918, and the estimated production for the whole year; also a detailed statement showing how costs have increased, and what, in your opinion, can be done by the Government to assist gold mining. All statements will be treated as confidential, for Government purposes only, and accuracy is absolutely necessary. All figures given must be subject to confirmation afterward. Letter and blank follow. Hennen Jennings, Chairman, Bureau of Mines." At a meeting to be held in Denver the mining men will decide what they shall expect of their delegates at the meeting to be held at Reno, Nevada, at which all the larger mines and associations of metal producers will be represented. The Reno meeting was called by Governor Emmet D. Boyle, of Nevada. It is thought probable that at that time the mining men will recommend that the Government place a bonus of £2 per oz. on all gold produced, and also abolish

all Federal taxes on mining development. It is claimed that further production is hampered by such special taxes, and that to entice mining interests to undertake further development every inducement will have to be used. American mining men argue that all mine development is to some extent a gamble, and that the winners receive such a small profit that the taxes have completely discouraged all efforts to open new sources of gold production. In all districts where gold occurs in pockety deposits, requiring a relatively large amount of underground development work in proportion to the ore opened up for mining, practically no mining development is being performed. Many of the gold-producing camps of Colorado have lost from 25 to 60 per cent. of their population in the last year, through the closing of mines and the lack of profit in leasing operations under present cost of labour and mining supplies, and without a compensating change in the value of the product. American mining men, unfortunately, show themselves no better able than the rest of us to suggest how the Government can help their mines without injuring its own credit by admitting a depreciation of paper currency. That is the crux of the problem in America as in London and here. If the new British Committee of Enquiry follows the example of the American Committee, and calls for voluminous masses of statistics from the gold mines, the result, under the circumstances now prevailing, can only be to delay a decision till the low-grade mines of the Rand will have ceased from troubling—which, perhaps, after all, is the object of the appointment of the Committee.

A circular issued by the secretary of the Heidelberg Estates and Exploration Co. under date of August 24 states that at the meeting of Heidelberg Estates and Boschoek. on July 22 last the chairman said that negotiations were proceeding satisfactorily to provide for boring and prospecting work being carried out forthwith on the Boschoek property, owned by the Boschoek Proprietary. The terms involve the sale (if the contractor exercises his option to purchase) of the mineral rights in that property upon a basis whereby a substantial share interest in the new company will be reserved to the Boschoek Co., which should become of considerable value. Ample provision is made for working capital, in the subscription of which the Boschoek Co. will be entitled to participate. The negotiations have now been completed, and owing to the large interest held by this company in the Boschoek Proprietary, the directors of the latter company have given their approval to the agreements being submitted to the shareholders of this company before entering into the same. The resolution refers also to terms which have been made for payment by the Boschoek Co. of certain percentages and also for an extension (in certain events) of the right which at present exists to the H.M.R. Syndicate, Ltd., to subscribe for shares at par in the Heidelberg Co. The Heidelberg board consider that all the terms are reasonable, and the facts will be fully explained at the meeting. Any shareholders who desire to inspect the proposed agreements can do so at the company's solicitors, Messrs. Mayo, Elder & Co., 10 Drapers' Gardens, on any day prior to the meeting, between 10.30 and 4 (Saturdays excepted). The meeting will be held at the registered office, 20 Copthall Avenue, on September 2 at noon. The resolution to be submitted approves the action of the directors in assenting to the arrangements referred to, and in assenting to the Boschoek Co. agreeing to pay 3½ per cent. of the total purchase consideration receivable by it under that proposed agreement to Sir Edward Coates, Bart., M.P., and a like percentage to Charles Thornton Pulley, M.P. The resolution also approves the draft agreement intended to be made between the Heidelberg Co. and the H.M.R. Syndicate and authorises the directors to carry it into effect, with or without such modifications (if any) as they may from time to time approve, notwithstanding that the directors of the Heidelberg Co., or some of them, may also be interested in the Boschoek Proprietary and/or the H.M.R. Syndicate as directors, shareholders, or otherwise.

THE YEAR WITH THE ROOIBERG MINE.

Points from the Annual Reports of the Directors and Superintending Engineer.

For the year ended June 30, 1918, the revenue of the Rooiberg Co. from tin concentrates amounted to £85,334. A further £867 was derived from interest, etc. The expenditure amounted to £77,936. The gross profit was £8,528, to which is to be added £22,669 brought forward from last year. An amount of £5,576 was expended in connection with the acquisition of the mineral rights of the farm "Blaauwbank," leaving a balance of £25,621 carried forward. A sum of £21,450 stands to the credit of the reserve fund. All expenditure upon development, exploration, and alluvial sluicing, amounting to £25,589, has been charged to working costs. The average price of metallic tin, on which the sales of concentrates for the year were effected, was £262 per ton, as compared with an average of £191 for the previous year.

SUPERINTENDING ENGINEER'S REPORT.

In his annual report the superintending engineer, Mr. E. R. Schoch, writes:—Main shafts: No. 5 main shaft was sunk a distance of 237 ft., and has now reached a total depth of 619 ft. below the collar, measured on the incline. A station and ore bin have also been constructed at the 4th level, and a station on the 5th level. No. 6 main shaft (auxiliary), east end old workings: This shaft is situated between the alpha and beta lodes. Sinking from the 100 ft. level was commenced towards the latter end of the year, a distance of 24 ft. having been accomplished. Development: The total footage driven, risen and sunk, excluding main shafts, was 5,164 ft. at an average cost of £1 19s. 11·2d. per foot. The results for the year under review have on the whole been disappointing, and whereas numerous small pockets of medium grade ore were encountered, no large blocks of payable ore have been opened up. In course of sinking the No. 5 main shaft, payable ore was discovered on the Union lode, between the 310 and 410 ft. levels, the significance of which has yet to be proved. Exploration on Blaauwbank: The exploration of the tin occurrences on the eastern portion of this farm has met with a fair amount of success, and the prospects of opening up deposits of economic value are distinctly promising. It is premature at this stage to say whether the lodes, which have so far been only exposed near the surface, will maintain payable values in depth, but the results obtained to date furnish reasonable hope that this may be the case. Steps are now being taken for testing the lodes in depth. A crushing of 2,193 short tons of ore was put through the Rooiberg plant during the month of May, which yielded 31·75 long tons of concentrates, of an average grade of 69·04 per cent. met. tin, and showed a recovery of 84·84 per cent. These results may be regarded as quite satisfactory. Alluvial sluicing: In the matter of tin winning the plant has given improved results during the past year; the quantity of concentrates recovered was 17·75 long tons, of an average assay value of 21·34 per cent. met. tin, from 10,663 cubic yards sluiced. A number of fissures containing a low percentage of tin have been located in the area denuded of its overburden, but no payable ore bodies have been encountered. The prospects in this direction, however, continue hopeful, and arrangements are now in progress to accelerate the stripping of the overburden and also improve the recovery of tin from the sands by the installation of a Deister Rougher, a shaking table of large capacity. Results of operations: Mining, milling and concentrating: Ore mined from all sources (including Blaauwbank), 20,027 tons; less waste sorted out = 6·54 per cent. of tons mined, 1,045 tons; tons to mill bins, 18,982; less ore in bins at 30th June, 1918, 280 tons; total tons milled, 18,702 tons; stock slimes retreated, 11,151 tons; average assay value of mill pulp, 1·89 per cent. metallic tin; average assay value of stock slimes before treatment, 0·97 per cent. metallic tin; average assay value

of final tailings, 0·34 per cent. metallic tin; concentrates recovered, 480 long tons; average grade of concentrates, 66·49 per cent. metallic tin; extraction based on recovery + final tailings, 82·01 per cent. Analysis of recovery: Rooiberg current ore: Long tons concentrates, 361·70; per cent. met. tin concentrates, 66·31; long tons met. tin, 239·84. Rooiberg stock slimes: Long tons concentrates, 86·55; per cent. met. tin concentrates, 66·31; long tons met. tin, 57·39. Blaauwbank ore: Long tons concentrates, 31·75; per cent. met. tin concentrates, 69·04; long tons met. tin, 21·92. Total: Long tons concentrates, 480·00; per cent. met. tin concentrates, 66·49; long tons met. tin, 319·15. The retreatment of stock slimes during the year resulted in a recovery of 86·55 long tons of concentrates of an average grade of 66·3 per cent. met. tin. The average assay value of the slimes before treatment was 0·97 per cent., the estimated yield showing a recovery of 60 per cent. The estimated gross revenue was £14,626, and the net profit £6,941. The results achieved by the process may, therefore, be said to be most successful. The extraction during the year from the combined treatment of current mine ore and stock slimes was 82·01 per cent., showing an improvement as compared with the year previous of 2·21 per cent., notwithstanding the fact that the grade of the ore before treatment was lower and the material finer in substance than previously, owing to the inclusion of a large proportion of stock slimes. Finance: The following gives details of the working costs, revenue and profit for the year:—Mining, £9,220 16s.; transport, sorting and crushing, £2,040 8s. 3d.; milling and concentrating, £17,696 10s.; drying and bagging, £1,940 12s. 1d.; realisation charges, £10,239 16s.; general expenses, mine office, £6,789 5s. 5d.; general expenses, head office, £3,540 15s. 8d.; general expenses, London office, £878 9s. 1d.; development and exploration, including "Blaauwbank" and alluvial sluicing, £25,589 7s. 7d.; total, £77,936 0s. 1d.; working profit, £7,397 12s. 2d.; working revenue, £85,333 12s. 3d. Included in the working costs is an amount of £602 10s., representing the active service allowances granted to dependents of employees serving in the war. Both dams were repeatedly filled to overflowing during the rainy season. The rainfall was 38·11 inches on 100 days, as compared with 28·79 on 74 days the year previous. All machinery and plant have been maintained in good running order. The supply of native labour has been ample for all requirements. Five employees are at present on active service in Europe; and sixteen have seen service during the war to date. General position and future prospects: The heavy rains during the year considerably hampered operations, and the amount of development and exploration accomplished has in consequence been less than that in the previous year, resulting in fewer discoveries and less tonnage being developed. There is insufficient ore developed in the mine to keep the plant fully supplied. The satisfactory results obtained on Blaauwbank, together with the encouraging values found on the Union lode in depth, justify the opinion that there is no reason to be discouraged, and that with the work now going on the prospects may become brighter at any moment. In conclusion, I wish to record my appreciation of the able assistance accorded me by the acting manager, Mr. J. C. Wilson, and of the efficient service rendered by the employees during the year.

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THE OUTLOOK FOR THE SIMMER AND JACK.

Points from the Consulting Engineer's Report.

In his report on the Simmer and Jack for the year ended 30th June, 1918, Mr. C. D. Leslie, the consulting engineer, writes:—The tonnage milled was 79,900 tons less than that milled during the previous year. The average recovery value per ton, after including 3,100 ozs. of gold taken from reserve gold account, was higher by 1s. 8-424d. per ton, while working costs showed an increase of 1s. 11-283d. per ton, the declared working profit being reduced by 2-859d. per ton to £195,303 13s. 8d., or £31,883 5s. 11d. lower than the working profit for the preceding year. As compared with the averages of the previous year there was a decrease of 325 underground natives and 27,250 tons milled for the first half and 222 natives and 52,650 tons milled for the second half of the year under review, the lower tonnage duty per native during the last half of the year being attributable chiefly to curtailed hours of employment and the short Saturday shift obtaining since 1st January, 1918. Very good results have been obtained on the mines with small rock-drilling machines of the jack hammer type, which have proved both efficient and economical. The gradual replacement of the hammer boy by these machines should have the effect of reducing the number of natives required for underground work. Operations were considerably hampered during the summer months by the abnormally heavy rainfall, which caused a large influx of water to the mine workings. During the month of January last the total quantity of water handled daily amounted to 1,050,000 gallons, as against the normal average of 400,000 gallons per day. The expenditure on shaft maintenance and support of mine workings was higher than in the preceding year by £16,104 1s. 11d., or 5-639d. per ton milled. Arrangements have been made for dealing with the tonnage to be mined from the 40-6 claims purchased from the Simmer

Deep, through the Rhodes vertical shaft, which enters the workings of that area. Under the proposals it is estimated that an amount of £83,000 will be spent, but this ought to be a very profitable investment because of improved facilities which will be given for increasing the output from this section of the mine, and reducing the cost of working. It is expected that this scheme will be in operation soon after the middle of next year. The ore reserve fully developed at 30th June, 1918, is estimated at 1,538,000 mine tons of an average value of 5-67 dwts., in addition to which the partially developed ore is estimated at 211,000 mine tons of an indicated value of 4-98 dwts. These figures were obtained after eliminating a considerable tonnage of a grade below that which can be dealt with profitably under present condition of mining. In addition to this reserve there is a large tonnage of reclamation rock which is expected to yield a profit, but which has not been included on account of insufficient information. The members of the mine staffs have been most inventive and skilful in effecting economy by utilizing as much as possible the waste material which had accumulated before the war when supplies were cheaper. As only a comparatively small quantity of such material remains to be dealt with, the saving in this direction, unfortunately, cannot be maintained. Towards the end of last year a reverberatory furnace designed on the mine was installed at the blacksmiths' shop, and the mine can now manufacture certain small spare parts of machinery at a much lower cost than if purchased locally. The superintending engineer joins with me in expressing appreciation of the loyal services of the manager and his assistants during a year in which abnormal difficulties were superimposed upon the disabilities under which the mine suffered owing to war conditions.

New Patents.

523. Wilfred Moraine.—Improvements in oil feeders.
524. The Agricultural Co-operative Union, Ltd.—An invention for chopping and grinding bark and other fibrous materials in one operation, producing a product excellent for leaching purposes with the minimum amount of dust, and leaving the pores open so that the product is easily accessible to the water.
525. David Laurie.—Improvements in and relating to wire rope grips or jockeys and the like.
526. James Bulmer.—Improvements in calcining crystals.
527. The Mauss Continuous Centrifugal Separator, Ltd.—Improvements in centrifugal separation.
528. Charl Daniel van der Merwe.—Process for rendering the phosphoric oxide content of a mineral phosphate, especially an iron aluminium phosphate, soluble.
529. James Stuart Wearn.—Improved indoor game of skill.
530. Arthur John Lewis Eckersley.—An appliance for delivering effervescent liquids.
531. Harry de Pinna.—Improvements in sole protectors for boots and shoes.
532. David Ritchie McLachlan.—Improvements in linings for tube mills.
533. Frederick Francois Betheder.—Improvements in and relating to ox-yokes.
534. Edward Sidney Martens.—A tube scraper.
535. Frederick Luke.—Improvements in and connected with the economization of hydro-carbon engine fuel.
536. Harry Benda Miles.—Improvements in and connected with talking machines.
537. Edward David Lee and Salamon Theodor Roelsfsz.—Indicator Buoy.
538. Herbert Dean and the Chloride Electrical Storage Co., Ltd.—Improvements in electric accumulators.
539. Nobel's Explosives Co., Ltd.—Improvements relating to explosives.
540. James William Claude Hamilton and Edward William Quirk.—Improvements in sterilizing cereals, nuts, seeds and the like.
541. Saville Whiting.—Improvements in and relating to devices for securing together the ends of metal strips and bands.
542. John Francis Kimberley.—Improvements in stamps for crushing purposes.
543. British United Shoe Machinery (S.A.), Ltd.—Improvements in or relating to blacking or like machines for treating parts of boots or shoe bottoms.
544. British United Shoe Machinery (S.A.), Ltd.—Improvements in or relating to lasting machines for use in the manufacture of boots or shoes.
545. Kapolwas Rubber Co., Ltd.—A device for forming a cut support and spout for attaching to trees for the collection of rubber latex, wild gum, turpentine, or the like purposes.
546. Albert William Hugh Marshall and Samuel Davis John Bauld Kennedy.—A new and improved composition for use in making or repairing steam, acid, and ammonia fume proof joints.
547. George Cochran Snyder.—Hollowware and the manufacture thereof.
548. George Rogers, Arthur Stanley Sullivan and John Edwin Williams.—Improvements in safety devices for mine conveyances.
549. Alec John Gerrard.—Wire stretcher.
551. Samuel Grossman.—Improvements in resilient wheels.
552. John William Warren.—Improvements in electric indicators applicable for emergency signals for hoisting plants.
553. Bert Wright.—Improvements in concrete blocks or sections for buildings, tanks, reservoirs, chimneys, and other structures.
- 554.—General Electric Co.—Improvements in and relating to radio signalling systems.
555. William Smith.—A safety device for preventing explosions in air compressors, delivery pipes, and adjacent receivers.
556. Alfred Webb.—An improved brush bridle.
557. Stanley Edgar Dickinson.—An improvement in means of obtaining motive power.
558. William Craig Willox.—Self-acting buffer.
559. Edwin Edser, Stanley Tucker and Minerals Separation, Ltd.—Improvements in or relating to the concentration of ores.
560. Samuel Alexander Pollock.—Improvements in or relating to the rectification of alternating currents of electricity.
561. Nitrogen Products and Carbide Co., Ltd.—Improvements in or relating to the destructive distillation of carbonaceous materials to increase the aromatic by-products thereof.
562. Leon Byron Woodworth and William Andrews Tester.—Series signalling system.
563. Andrew Frederick Crosse.—Improved process for the production of phosphates from certain phosphatic rocks.
564. Barney Rosenberg.—Improvements in safety brakes for haulage systems.
565. Charles Albert Eadee.—The metal-capped cork economizer.
566. Central Engineering Works, Ltd.—Improvements in valves.
567. William Theodore Hoofnagle.—Method of and apparatus for treating gases and vapours electrically.
568. William Mathie McNeill.—The Malvern manual training wood-work vice.

THE POSITION OF THE SUB NIGEL.

MR. C. D. Leslie, the consulting engineer of the Sub Nigel, in his report covering the operations of the company during the year ended 30th June, 1918, writes:—Compared with the previous year, the tonnage milled was increased by 5,500 tons, the declared revenue per ton being 5s. 0·070d. higher, in addition to which gold to the value of £2,479 3s. 4d., equal to 5·139d. per ton milled, was added to reserve gold account. The increase in working costs of only 7·885d. per ton, notwithstanding the increasing disabilities resulting from war conditions, is indicative of the care and attention which have been given to economical working. The declared working profit of £91,769 1s., equal to 15s. 10·227d. per ton milled, is 4s. 4·185d. per ton higher than that for the preceding year. "C" incline shaft was advanced a distance of 663 feet during the year, to the 18th level, upon which development will proceed shortly. Improved winding equipment has been installed, which will considerably facilitate opening up the area served by this shaft. Development is being extended eastwards from "C" shaft and westwards from "E" shaft beyond the confined course of previous development, in the expectation that this will lead to fresh discovery of payable ore. The eastern

development in "D" shaft has been interrupted by a dyke about which further information is required. In "E" shaft the recent lower development values are less regular than usual, but this should not be regarded as a disquieting feature. The pay chutes in "C" shaft have been found to extend further westwards than was indicated by previous development. The ore reserve fully developed at 30th June, 1918, is estimated at 387,000 mine tons of an average value of 10·3 dwts., in addition to which the partially developed ore is estimated at 36,000 mine tons of an indicated value of 9·8 dwts. A new vertical shaft has been started and is expected to reach the reef horizon early in the year 1920. It will command the lower ground together with a contiguous area, situated on the farm Grootfontein No. 152, of 500 claims. This recently acquired area was carefully chosen as being in line with the calculated extension of the most promising ground of the Sub Nigel. Preparations are being made for rapid development to meet this new shaft so as to lose no time in carrying out the programme of crushing on a largely extended scale. The superintending engineer joins me in congratulating the manager and his staff on the excellent results of the year's work.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

Zaaipiaats Tin.

The Zaaipiaats results for the month of September, 1918, were as follows:—Days run, 25; concentrates won, 55 long tons; estimated profit for the month, excluding Government taxes and directors' fees, £7,165 11s. 8d.; capital expenditure, £70.

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THE NEW GEDULD SHARE ISSUE.

180,000 Shares at 35s. to Provide Capital for Extended Development Programme.

THE Geduld Proprietary Mines have issued a circular to shareholders explanatory of the issue of 180,000 new shares, from which we take the following:—As was foreshadowed at the last annual meeting, the necessary plant to commence the sinking of a third vertical shaft has been purchased locally. It is intended to take this work in hand in the near future. This shaft, which will be located on the dip of the intermediate and No. 3 incline shafts, will open up a new area of the company's property. It is intended also to push on development in the mine generally as quickly as circumstances will permit, with a view to increasing the crushing capacity of the mill when the quantity of ore expected from that work justifies it. During the quarter ended 30th September last, the total footage sampled was 3,125 feet, of which 945 feet assayed 24·9 dwts. over 25 inches. The development results for the nine months to 30th September show that, out of 9,170 feet sampled, 2,820 feet assayed 24·6 dwts. over 28 inches. The provision of additional capital will enable a greater proportion of future profits to be distributed in dividends, inasmuch as there will not be the need to trench upon these profits so heavily as hitherto to meet capital expenditure. In order to provide necessary funds, and also to meet, in part, expenditure on further incline shaft sinking, the directors, under the powers conferred upon them to increase the capital from time to time up to a total of £1,500,000, have decided to create and issue from time to time new

shares up to a total of 180,000 of the nominal value of £1 each, such new shares to rank *pari passu* with the shares of the company existing at the time or times of their creation. The whole of this issue has been guaranteed by the Union Corporation, Ltd. (heretofore known as A. Goerz & Co., Ltd.), at the price of thirty-five shillings per share, in consideration of a cash commission of five per cent. on the issue price of the shares. The subscribers of the 180,000 new shares will receive bearer option certificates giving them the right during the period ending on the 31st December, 1921, to subscribe for and take up at the price of forty shillings per share additional new shares, to be created and issued as and when required by the option holders, in the proportion of one such additional new share for each share subscribed for and allotted in the present issue. Shares in the issue of 180,000 new shares are now offered at the price of thirty-five shillings per share to shareholders resident in South Africa, registered as such at the close of business on the 26th October, 1918, or being the holders of share warrants to bearer, in the proportion of one new share for every four shares held at such date. Shareholders will be entitled to renounce in favour of third parties. Provided that the consent of the Imperial Treasury and of the French Minister of Finance to the issue and to the transmission of monies subscribed to South Africa be obtained on or before the 11th December next, a similar offer will be made to shareholders resident in British and French territory.

Bechuanaland Exploration.

A comparison of the accounts for the past two years shows that the position underwent a substantial improvement in the later period. This is here set out:—

	March 31, 1918.	1917.	
Stocks and shares and interests	£180,553	£193,538	— £12,985
Value	217,060	213,168	+ 3,892
Of which quoted	110,251	79,621	+ 30,630
Unquoted	106,809	133,547	— 26,738
Debtors	11,020	2,305	+ 8,715
Loan	5,700	5,700	—
War Loan & Exch. Bds.	23,229	17,729	+ 5,500
Treasury Bills	23,318	14,592	+ 8,726
Cash	8,085	9,455	— 1,370
Creditors	4,726	4,442	+ 284
Profit on realisations ...	5,804	1,155	+ 4,649
Dividends	12,187	14,480	— 2,293
Rents, interest, etc. ...	7,055	6,976	+ 79
Dividend per share ...	/6	/4	+ /2

Not only were stocks and shares sold, but the value of those remaining is higher, while the proceeds to a great extent seem to have gone into gilt-edged securities as well as to assist borrowers. At the annual meeting the chairman gave an encouraging account of the Rhodesia Broken Hill and Bwana M'Kubwa, in which the company is interested.

New Kleinfonteins.

The report of the directors of the New Kleinfontein, Ltd., for the quarter ended 30th September, 1918, shows that:—Mine: Shaft sinking: Number of feet sunk, 249 ft.; number of feet, ore bins, etc., 53 ft.; development (excluding shafts): number of feet driven, risen and sunk, excluding boxholes, 4,180 ft.; footage sampled, 2,635 ft.; footage sampled (payable), 755 ft.; mining width (payable), 56 in.; assay value (payable), 8·13 dwts.; number of feet boxholed for sampling purposes, 57 ft.; ore milled, 169,840 tons; capital expenditure, shaft sinking and equipment, £5,867; working costs, £212,612 10s., or £1 5s. per ton milled;

working profit, £8,228 10s., or 1s. per ton milled. No allowance has been made for interest amounting to £2,646, nor for the taxation imposed under the Income Tax (Consolidation) Act, 1917.

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THE PROBLEM OF GOLD, NOTE ISSUES AND CURRENCY.

[By E. G. Izod.]

To the discussion on the paper by Mr. Alex. Aiken on "Note Issues and Currency," read before the South African Institution of Engineers, Mr. E. G. Izod at the last meeting made the following contribution:—In spite of a promise to make a few enquiries of Mr. Aiken on his valuable paper, I have found it somewhat difficult to sift the subject down sufficiently finely to enable me to ask really intelligent questions. It has been stated that great gold discoveries and a consequent greatly increased output may cause a general rise of prices. While this may be so, it is difficult of conception, for it is a primal fact that prices for commodities, necessities, etc., are varied or regulated by conditions generally apart from the amount of gold either in the banks or in circulation, a question to which I shall refer later. For internal currency it would appear that gold is really only necessary to establish faith with that proportion of the public which is distrustful, as it is perfectly obvious that if every member of the investing public was to become suddenly distrustful and demand gold it would be impossible to meet that demand. It has also been said that if people of the British Empire hope greatly to increase their volume of trade and commerce the gold basis will have to be abandoned as insufficient, and consequently insecure, and that that commodity will have to be replaced by the safer and broader basis of national credit. It seems, therefore—and I should like Mr. Aiken's comment on this—that to meet both conditions and for true prosperity we should have both the gold basis and the national credit basis—the gold basis for normal incredulity, the national credit basis for abnormal incredulity. Those who are pressing the importance of replacing the gold basis by the national credit basis are surely forgetful that our position would thereby be very materially weakened when we set out to buy in the markets of the world; and from whichever view point we look on the question there appears only one great lesson, viz., that the more gold we can pour into the coffers of the Empire's financial centre of gravity the more we are assisting to build up the Empire's prosperity. Bismarck was reported to have once made the statement that there were three things essential to win a war. The first was money, the second was *money*, and the third was MONEY, and if money is necessary to win a war between men, then surely it is necessary also to win a war in trade. It is true that our banking system rather started to totter when this great world war broke out, but the credit of the Empire came to the rescue and stability was restored; and the most pessimistic of pessimists will surely admit that the finances of our great Commonwealth has stood, and is standing, the terrible stress without as yet reaching the inelastic limit. Admitting that gold as a basis of currency is necessary, we are led to interesting investigations on which Mr. Aiken may perhaps enlighten us. No reference was made in the paper to the much discussed "Gresham Law," which, in popular phraseology, is "bad money drives out good money," but, as an explanation of this would probably give interested members a clearer insight into some of the intricacies of gold circulation problems, I would ask Mr. Aiken to refer to it in his reply. Is it not a fact that any individual to whom a sovereign or half a sovereign—weighing less than 122½ grains and 61·125 grains respectively—is tendered is bound to deface it, by law, and hand it back to the individual from whom he has received it? In those conditions, who bears the loss? I would ask also whether instances have happened of this occurring, and if it is not an explanation of the application of the Gresham Law. It may interest engineers to know that in October, 1697, the Treasury of England gave 22s. in cash for every gold guinea, which was tantamount to overrating gold. This caused trouble, and our old friend Sir Isaac Newton was asked to report on the matter. He did so, and his advice was probably as sound a bit of finance as was ever offered; it is gratifying to know that even more than 200 years ago engineers were able to assist in questions of finance. The

value—by value I mean the purchasing power—of gold has been wonderfully steady for about 100 years, and that is another justification for the wisdom of adopting gold as a basis of currency. I do not mean to infer that prices have not risen or fallen—some have increased enormously, and there are fluctuations even from month to month—what I mean is that the average of priced commodities has remained very steady. Years ago, for instance, clothes were cheap, tobacco, tea, etc., very dear. Where some prices have risen, others have fallen, but investigation shows a steady average load factor, very little affected by changing conditions. I should be glad if Mr. Aiken is able to confirm that this is correct. Mr. Aiken has given us a very instructive statement on values, a difficult subject to follow. But whichever way we look at it, we must agree that his method of arriving at a definition of value is sound, although it is rather sad to those of us who are used to more concrete methods that there is no better description of so important a factor. John Stuart Mill in his work on Political Economy makes a statement about values, etc., which may be

represented by the equation: $X = \frac{W}{V}$ where X = value of

money, W = quantity, V = velocity of circulation, but unfortunately I am unable to give any constants for multiplying these terms, and the equation only represents what is really a general equivalent to Ohm's Law in electricity. If Mill be correct, then values can be increased by reducing the quantity, but it seems to me, as I have said, that it would necessitate an abnormal decrease in quantity to affect value, and I must agree with Mr. Aiken's conclusion that it is impossible to expect any benefit to the community, by way of reducing prices or increasing values, simply by closing certain of our mines, and, in consequence, reducing the quantity of available gold. Putting my information into figures, the following will illustrate the slight effect the closing down of certain mines will have on the gold supply of the world. The total available gold of the world to-day as coinage or bullion is approximately two hundred thousand millions of pounds. The average output per annum of gold is approximately £90,000,000, of which, it is fairly reasonable to estimate, about £12,000,000 is absorbed in directions which will not permit its being made into coin. Assuming certain low-grade mines (already referred to) are shut down, it would only affect the world's total gold in circulation by about '0044 per cent. It will, therefore, be seen that the decrease in the world's output will have to be very large indeed to have any appreciable effect on values, assuming the accuracy of Mill's statement on values, quantities and velocities. On the other hand, an increase in the quantity, however small, must increase the

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holder's power to issue notes, or, better still, increase the credit that can be secured. On the subject of values I should like to add to Mr. Aiken's description of what affects values. There is a direct influence on values exercised by the law of supply and demand, and, in the absence of assistance in the control of supply by the State, and with the certain knowledge that advantage is taken of a situation where supply is a minimum and demand is a maximum, we have an element controlling values that is outside any correlation of quantity of gold or velocity of circulation. Assume that "A" controls supplies which are less than the demands of "B," then if "A" wishes to (and he nearly always *does* wish to) he can increase the price of his supplies to any amount. "B" pays increase, and promptly demands more for his labour in order to purchase from "A" and maintain the margin between revenue and expenditure. "B's" requirements for an increase in the value of his labour is reflected in the value of "A's" supplies, and as "A" wants to maintain *his* margin also, the supplies he controls again increase in price, "B" meantime demanding "A's" supplies, even at the increased cost, so that the only party really benefiting is "A." Although it is entirely beyond the area covered by Mr. Aiken's paper, and is a subject alone of absorbing interest, I am entirely satisfied that Mr. Aiken is correct in stating that increased values have very little to do with the gold or money metal. I am also convinced that there are ways of reducing prices and benefiting the community thereby, and it is regrettable that steps are not taken which will lead to this much desired end. Broadly speaking, I would make the deliberate statement that values are to a con-

siderable extent in the hands of the people themselves. One section grumbles at high values; the other section is entirely satisfied. Members may be interested to know the increased note issue now and before the war: July, 1914, nil; July, 1915, £49,298,471; July, 1916, £124,580,110; July, 1917, £164,728,380; July, 1918, £258,911,758. Against these notes there has been kept a constant reserve of gold coin and bullion to the credit of Currency Note Redemption Account of £28,500,000. That is the percentage of gold to notes was: July, 1914, nil; July, 1915, 57·8; July, 1916, 22·8; July, 1917, 17·3; July, 1918, 11·0. The Government securities given against the large excess issue of notes in July last amounted to £236,302,625. The ratio of reserve to liabilities in the Bank of England in July, 1914, was 52·40 per cent., whereas in July, 1918, it had fallen to 16·40 per cent. Although the reserve has fallen by this heavy amount, the position is really just as secure as formerly by reason of the national credit being called into action to balance up the difference. In concluding these remarks, I would apologise to the author of the paper for not having prepared more elaborate criticism. As I have already mentioned, the subject bristles with problems which are only even partly understandable as the result of a very thorough investigation, and I should like to add my word of thanks to Mr. Aiken for bringing home to us all one point which becomes evident on a perusal of his paper and after the discussion. Too few of us to-day appreciate that one of the most important foundation-blocks of our Empire is the supply of gold, and we should do all we can to ensure our supply being maintained and, if possible, increased.

The Gold Question: Sir Lionel Phillips's Latest Views.

Sir Lionel Phillips, Bart., in an interview with the *Daily Graphic*, says: "I understand it is the intention of the Government to set up an expert committee to deal with the whole question of gold production, with a view to formulating a policy. Action of the same description is being taken in America, where a committee is, I believe, actually sitting. From the public standpoint the gold mining industry as such is no more entitled to consideration than any other industry which may have suffered or gone under in consequence of the war. While, therefore, as the representative of a considerable quantity of gold, I am anxious that the industry should not go under, I have not made speeches on the subject on that account. In my belief gold will be more needed after the war as a backing for credit, and for the purposes of settling foreign exchanges, than it ever has been in the past. Debts incurred abroad have ultimately to be settled in commodities, but it may take years before such commodities can be either produced or consumed. These debts will remain open, and the question of the rate of interest demanded for them will depend materially upon the gold backing possessed by the debtor against his liabilities. If all countries were equally endowed with raw products, with a reputation for honesty, and with populations equally industrious, a paper system upon which credit could be founded might answer the purpose. Such conditions, however, never have existed, and are never

likely to exist upon this globe—hence the gold standard. Creditors are not satisfied with international notes of hand alone, but have to be assured that behind the notes there is a groundwork of real wealth. That real wealth, for purposes of exchange, is represented by gold. The quantity of gold held by a country is not actually a measure of its wealth, but is a guarantee that its trade acceptances are going to be honoured in due course."

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THE SPRINGS MINES—SPRINGS WEST AGREEMENT.

Full Details of Scheme of Operations.

THE scheme of joint operations between the Springs Mines and West Springs has been formally approved by the Minister of Mines, and has been published for general information. The most important clauses are as follows:— Springs Mines grant to West Springs the following mining facilities: (a) The use of the shafts belonging to Springs Mines, shown on the plan annexed, and marked thereon as North Shaft and South Shaft respectively, for the purpose of ventilation and of the hoisting of men, rock and material, and for the transmission of power. (b) The use of the several levels in the mine of Springs Mines shown on the said plan, and any other levels or roadways which may be agreed upon from time to time for the purpose of extending the same into and thereby developing the lease area, and also for the purpose of ventilation; subject to the following conditions:—

1. The use by West Springs of the said shafts and levels shall be exercised so as not to prevent Springs Mines from enjoying the full use of the same for any purposes connected with its mining operations, it being understood that Springs Mines agrees to allow West Springs to enjoy the use of the said shafts and levels for the purposes aforesaid only in so far as such use is compatible with the unrestricted use of the said shafts and levels by Springs Mines for its own purposes, and that whenever Springs Mines requires the use of such shafts and levels for its own purposes, the requirements of Springs Mines shall have preference over the requirements of West Springs.

2. The development operations of West Springs shall, while it exercises the use of the said shafts and levels, be performed by and be under the management and control of Springs Mines, but Springs Mines shall in relation thereto carry out the wishes of West Springs in so far as they can be carried out without interfering with the current operations of Springs Mines.

3. All ore removed, in the course of extending the said levels and other development, through the said levels shall be at the sole disposal of Springs Mines, who shall be entitled to retain as its own all gold won from such ore, whether such ore shall be removed from the mine of Springs Mines or from the Lease Area.

4. West Springs shall be entitled to enjoy the mining facilities hereby granted for a period of four years commencing on the date of the signing hereof, but it is understood that if on the termination of the said period West Springs has not been able to sink and equip, for use within the Lease Area, all shafts necessary for the exploitation and development thereof, Springs Mines will be prepared to negotiate for an extension of the time of enjoyment of the said facilities, upon terms then to be agreed upon. If West Springs desires to negotiate for such extension, it shall give notice of such desire at least seven months before the termination of the period aforesaid.

5. West Springs shall, after the said levels are extended into the Lease Area, construct, when called upon by Springs Mines so to do, on the boundary between the Lease Area and the property of Springs Mines, a dam or dams, furnished with iron doors, to protect the property of Springs Mines from a sudden influx of water from the Lease Area. Such doors shall periodically be tested in the presence of representatives of Springs Mines, and any defect in their working shown by such tests shall forthwith be remedied at the cost of West Springs. If any influx of water is met with in the course of development operations in the Lease Area, West Springs shall provide the pumping plant necessary to enable Springs Mines to deal with such water, and shall refund to Springs Mines the expenses incurred by working such plant for such purpose.

6. All plant and machinery required directly or indirectly for the use by West Springs of the said shafts and levels, and for the extension of the said levels, and the exploitation through the said levels of the Lease Area, shall be supplied and installed by West Springs, and more particularly West Springs shall supply and install forthwith a compressor plant of suitable capacity, a 9in. air column down the shaft marked as South Shaft in the plan attached hereto, and a 6in. air main into the Lease Area along the line marked on the said plan "West Haulage, South Shaft." Springs Mines shall not during the period of this Agreement or any extension thereof draw air for its own purposes from the said 6in. air main.

7. The pumping plant mentioned in Clause 5 hereof, and the compressor plant, air column and air main mentioned in Clause 6 hereof shall be erected and installed under the supervision and to the satisfaction of Springs Mines, who shall have the right to purchase the same or any of them at the termination of the period of this Agreement or any extension thereof at a valuation then to be agreed upon; or, if the parties are unable to agree, to be fixed by two arbitrators, of whom each of the parties shall appoint one, or, if the two arbitrators are unable to agree by an umpire appointed by the two arbitrators. Springs Mines shall not later than six months

before the expiration of the period aforesaid notify to West Springs in writing, whether and if at all to what extent it intends to exercise the said right of purchase, and shall be regarded as having abandoned such right except in so far as it shall so have notified its intention of exercising the same. Except in so far as Springs Mines shall exercise the said right of purchase West Springs may at the termination of such period as aforesaid dismantle and remove such pumping and compressor plant and air column and air main, and dispose of the same as it may think fit. Such dismantling and removal from the mine shall be under the supervision of Springs Mines.

8. The position of the haulage ways and lateral drives at the date of this Agreement in the property of Springs Mines, west of the line of North-west Haulage and South-west Haulage, shall, as between the parties, be taken to be accurately represented on the attached plan. During such time as the extensions of the said haulage ways and lateral drives are wholly within the area of Springs Mines, West Springs shall bear the cost of such extensions, and accounts thereof shall be settled monthly, within thirty days after details thereof shall have been rendered to West Springs by Springs Mines. West Springs shall bear the cost of such haulage ways and lateral drives driven after the date of this Agreement and during existence thereof, west of the development so shown, but in so far as such work is done within the boundaries of Springs Mines the cost thereof shall be refunded to West Springs by Springs Mines from time to time as and when such haulage ways and drives are utilised by Springs Mines in connection with its stopping operations, but in any case, within a period of five years from the date of this Agreement. Springs Mines shall keep proper records and accounts which shall show separately the cost of haulage ways and all other development done throughout the property of Springs Mines. The average cost per foot of such haulage ways and all other development shall be determined monthly, and the amount payable by West Springs shall be the average cost per foot of such haulage ways and of all other development so determined, multiplied by the footage driven in said haulage ways and lateral drives respectively.

9. When the said haulage ways and lateral drives have been extended into the Lease Area, the cost of all development in the said Area shall be borne by West Springs, and such cost shall be arrived at in manner following, that is:—

West Springs shall bear all direct charges incurred in carrying out such development and such direct charges shall include European salaries and wages, Native Labourers Account, Stores and Material Account, Workshops General Account, Machine Drill Account, Ventilation, Mechanical Haulage Dump Account, and any other charges which can be equitably charged directly to the said development in the said Lease Area. West Springs shall also bear a proportion of the total expenditure incurred on the whole of the joint workings by Springs Mines on the following Accounts:—(a) Shovelling and Trimming; (b) Underground Transport; (c) Winding; (d) Pumping; (e) Mining and all other charges; (f) General Expenses, Mine; (g) General Expenses, Head Office; and such proportion shall be double the proportion which the tonnage derived from the Lease Area bears to the total tonnage hoisted through the North and South Shafts of Springs Mines.

It is understood that the expenditure under the direct charges and the accounts (a), (b), (c), (d), (e), (f) and (g) shall not include the cost of permanent equipment, whether this be incurred in connection with development and exploitation in the Springs Mines or with development in the Lease Area. The cost of such permanent equipment incurred in connection with development within the Lease Area shall be deemed to be a further direct charge against West Springs.

Springs Mines shall keep proper records and accounts of the costs of development within the Lease Area in such manner as defined in this clause and such accounts shall be settled monthly, within thirty days after details thereof shall have been rendered to West Springs by Springs Mines.

10. The costs, records and accounts of Springs Mines shall, in so far as they relate to the amounts due by West Springs to Springs Mines, at all reasonable times during business hours on business days, be open to the inspection of West Springs.

11. Springs Mines shall engage but West Springs shall provide housing accommodation when necessary for all white men required for the purposes of the work to be performed by Springs Mines for West Springs under this Agreement. All native labourers required for such work shall be supplied by West Springs who shall provide proper compounds and compound managers and other officers for the accommodation and supervision of such native labourers.

12. West Springs shall at all reasonable times have free access for its Directors, Mine Manager and Consulting Engineer to any of the works to be performed by Springs Mines for West Springs under this Agreement, and Springs Mines shall at all times give due effect to the wishes and representations of the said Directors and Officers of West Springs in connection with such work so far as they can be given effect to without prejudicing the operations of Springs Mines.

New Companies.

The following is a list of the companies registered in July, 1918:-

5623. Lala, Ltd., 45, Central Road, Fordsburg; capital, £500. Private company.
5624. Eastern Bakeries, Ltd., 14b, Wilstead Street, Benoni; capital, £2,500. Private company.
5625. Estate H. Rosenberg, Ltd., 134, Commissioner Street, Johannesburg; capital, £208. Private company.
5626. E. Inspection Syndicate, Ltd., 80, Cullinan Buildings, Simmonds Street, Johannesburg; capital, £3,250. Private company.
5627. Charles Wood, Ltd., 226, Marshall Street, Johannesburg; capital, £500. Private company.
5628. Moosa Mohamed Amna and Son, Ltd., 122, Prinsloo Street, Pretoria; capital, £1,200. Private company.
5629. The Nadve Patel Estate, Ltd., 8, Pioneer Road, Fordsburg; capital, £500. Private company.
5630. Prema Tailoring Co., Ltd., 5, Bells Buildings, Main and Harrison Streets, Johannesburg; capital, £1,000. Private company.
5631. Chemical Manufacturing Co., Ltd., 91, Standard Bank Chambers, Commissioner Street, Johannesburg; capital, £2,000. Private company.
5632. Malealea, Ltd., 57 and 58, National Mutual Buildings, Rissik Street, Johannesburg; capital, £27,500. Private company.
5634. Ismail, Ltd., 52, Prinsloo Street, Pretoria; capital, £500. Private company.
5635. The Shareholders Protection Association, Ltd., 10, Transvaal Bank Chambers, Fox Street, Johannesburg; capital, £100. Private company.
5636. Rani Rajpura, Ltd., 59, Market Street, Johannesburg; capital, £2,000. Private company.
5637. The South African Patent Syndicate, Ltd., 260 Church Street, Pretoria; capital, £2,000. Private company.
5638. Ismail Mohamed, Ltd., Market Street, Pietersburg; capital, £3,000. Private company.
5639. The United Tea and Coffee Co. (S.A.), Ltd., 2, Estate Buildings, Fox Street, Johannesburg; capital, £4,000. Private company.
5640. Fruiterers, Ltd., 12, Rosenberg Arcade, 58, Market Street, Johannesburg; capital, £500. Private company.
5641. The Union Industries, Ltd., 5, Gresham Buildings, corner Rissik and Commissioner Streets, Johannesburg; capital, £500. Private company.
5642. D. Moses and Son, Ltd., 42, De la Rey Street, corner 17th Street, Vrededorp; capital, £250. Private company.
5643. The East Cham d'Or Gold Mining Co., Ltd., Wayside Buildings, Cleveland, Transvaal; capital, £6,000. Private company.
5644. South African Prudential, Ltd., Post Office Corner Buildings, corner Market and Rissik Streets, Johannesburg; capital, £50,000. Private company.
5645. Standard Salt Co., Ltd., 21, Steytler's Buildings, Loveday Street, Johannesburg; capital, £3,000. Private company.
5648. Virpor Madressa Anjuman Islaam, Ltd., care of B. Alexander and Bros., Sacke's Buildings, Joubert Street, Johannesburg; capital, £500. Private company.
5649. The Smithfield Cold Storage and Export Co., of South Africa (Transvaal), Ltd., 144, 145 and 146, Exploration Buildings, Commissioner Street, Johannesburg; capital, £500. Private company.
5650. M. C. Desai and Son, Ltd., Paardekop No. 89, District Standerton; capital, £2,000. Private company.
5651. Ford and Rossouw G.M. Co., Ltd., 24, Bureau Street, Pretoria; capital, £5,000. Private company.

FOREIGN COMPANIES.

5633. Rhodesia Exploration Co., Ltd., care of Julius Jeppe, 1st Floor, Jeppe Arcade, Fox Street, Johannesburg; capital, £600,000.
5646. Carbon and Carbide, Ltd., care of W. E. Moxley, 33, Royal Chambers, Johannesburg; capital, £15,000.
5647. Union Investment Corporation, Ltd., care of Dirk Cloete Jackson, 27, Church Square, Pretoria; capital, £5,000.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANIES.

1776. John Dickinson and Co.'s African and Australasian Branch, Ltd., Johannesburg.
3467. Fraser and Chalmers, Ltd., Johannesburg.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

3422. W. E. Horter and Co., Ltd., Johannesburg. Increase of capital.
4620. Union Cigar Stores, Ltd., Johannesburg. Destruction of books.
4807. Majams, Ltd., Johannesburg. Powers of Directors.
5428. Platrand Stores, Ltd., Standerton. Liquidation.
4033. Moores, Ltd., Johannesburg. Increase of capital.
5306. Wineberg, Ltd., Johannesburg. Alteration of articles.
5330. The Premier African Meat Export and Cold Storage Co., Ltd., Johannesburg. Alteration of articles.
3500. Transvaal Coal Owners' Association (1910), Ltd., Johannesburg. Alteration of articles.
4659. The Valod Trading Co., Ltd., Johannesburg. Powers of Directors.
4563. M. E. Friess, Ltd., Johannesburg. Alteration of objects.
5521. The Withank Chemical Co., Ltd., Johannesburg. Increase of capital.

1103. The Marais Molyneux Syndicate, Ltd., Johannesburg. Liquidation.
5577. McEwan's Buildings Co., Ltd., Johannesburg. Change of name.
3422. W. E. Horter & Co., Ltd., Johannesburg. Alteration of articles.
4914. Bhushnav Brothers, Ltd., Johannesburg. Liquidation.
5518. Union Box Factory, Ltd., Johannesburg. Liquidation.

NOTICES OF INCREASE OF CAPITAL.

3422. W. E. Horter and Co., Ltd., Johannesburg, from £66,000 to £90,000.
5048. Harry Leon and Hayhoe, Ltd., Johannesburg, from £10,000 to £20,000.
5322. S. Myers and Co., Ltd., Johannesburg, from £5,000 to £50,000.
5279. Tweelontein United Collieries, Ltd., Johannesburg, from £130,500 to £575,500.

NOTICES OF LIQUIDATION.

5428. The platrand Stores, Ltd., Standerton; capital, £4,000. Voluntary.
1103. The Marais-Molynenx Syndicate, Ltd., Johannesburg; capital, £30,000. Voluntary.
4914. Bhushnav Bros., Ltd., Krugersdorp; capital, £1,000. Voluntary.
5518. Union Box Factory, Ltd., Johannesburg; capital, £2,000. Voluntary.

NOTICES OF CHANGE OF ADDRESS.

4943. New Compound Diamonds, Ltd., care of T. E. Duckles, 17-18, Standard Bank Chambers, Johannesburg.
5161. Eribioem Diamond Prospecting Syndicate, Ltd., care of T. E. Duckles, 17-18, Standard Bank Chambers, Johannesburg.
4646. The Southern Van Ryn Reef G.M. Co., Ltd., Consolidated Gold Fields Buildings, corner Fox and Simmonds Streets, Johannesburg.
4505. Economic Sick Benefit Association, Ltd., 12, Royal Exchange Buildings, Market Street, Johannesburg.
161. The Goodman's Buildings and Chambers, Ltd., Jeppe Arcade, Commissioner Street, Johannesburg.
2157. Sauer's Buildings, Ltd., Jeppe Arcade, Commissioner Street, Johannesburg.
385. Potchestroom Exploration G.M. and Estate Co., Ltd., 52, Cullinan Buildings, Simmonds Street, Johannesburg.
2506. Felix Diamond Syndicate, Ltd., 52, Cullinan Buildings, Simmonds Street, Johannesburg.
3779. Nyando River Rubber Syndicate, Ltd., 52 Cullinan Buildings, Simmonds Street, Johannesburg.
4470. Betsirry Proprietary Oil Fields, Ltd., 17-18, Standard Bank Chambers, Johannesburg.
4776. Cape and Transvaal Land and Finance Co., Ltd., 17-18, Standard Bank Chambers, Johannesburg.
4837. Lucerne Lime Fertilizer Co., Ltd., 138-139, Exploration Buildings, Commissioner Street, Johannesburg.
5411. Sardat Estate, Ltd., 5, Bell's Buildings, Main and Harrison Streets, Johannesburg.
5515. The Hind, Ltd., 221, Kruger Street, Louis Trichardt.
5417. William King & Co., Ltd., 101, President Street, Johannesburg.
3889. Criterion Theatres (S.S.), Ltd., 101, President Street, Johannesburg.
5212. The United Manufacturers and Exporters, Ltd., 99, Market Street, Johannesburg.
4953. Pyanie Soobramania, Ltd., 41, President Street, Johannesburg.
4720. General Timber Co., Ltd., 20-21, Corporation Buildings, Commissioner Street, Johannesburg.
4579. Thè Delmas Milling Co., Ltd., 20-21, Corporation Buildings, Commissioner Street, Johannesburg.
4386. Robinson Deep Stone Crushing Co., Ltd., 20-21, Corporation Buildings, Commissioner Street, Johannesburg.
5040. I. de Smidt, Ltd., 20-21, Corporation Buildings, Commissioner Street, Johannesburg.
4413. The Craigie Mines, Ltd., 20-21, Corporation Buildings, Commissioner Street, Johannesburg.
4903. W. R. Levin and Co., Ltd., 63-66, 3rd Floor, Standard Bank Chambers, Commissioner Street, Johannesburg.
4341. Cassim Adam, Ltd., 341, Vermeulen Street, Pretoria.
3236. Louis Moore Proprietary Mines, Ltd., 94, Stock Exchange Buildings, Johannesburg.
3587. Southern Coal Co., Ltd., 12, Transvaal Bank Building, 65, Fox Street, Johannesburg.
5583. Taynoor, Ltd., 52a, Market Street, Johannesburg.
5529. Hajee Habib, Ltd., 52a Market Street, Johannesburg.
5596. Municipal Magazine, Ltd., 27, Henwood's Buildings, Johannesburg.
5236. Ebrahim and Amod, Ltd., 70, corner 10th and De la Rey Streets, Vrededorp.
3858. Sunlight Gold Mining Co., Ltd., Green's Buildings, Commissioner Street, Johannesburg.
4861. The Pelucine Chemical Industries, Ltd., corner Gold and School Streets, City and Suburban.
570. Paddon & Brock, Ltd., 106, Fox Street, Johannesburg.
1760. Kempton Park Estate, Ltd., 26, Permanent Buildings, Harrison Street, Johannesburg.
1915. Co-operative Exchange Yard, Ltd., 72-74, Marshall Street, Johannesburg.
5537. Cape Wine Bodegas Co., Ltd., 20, Robinson Buildings, corner Commissioner and Simmonds Streets, Johannesburg.

THE MINING INDUSTRY OFFICIALLY REVIEWED.—VI.

Some Extracts from Annual Reports of Inspectors of Mines.

RETORIA INSPECTORATE, TRANSVAAL (T. G. TREVOR).
GENERAL.

Notwithstanding the increased difficulties of mining owing to the war, the number of employees on the mines in this inspectorate and the value of the output remains almost unaltered, the total number of whites employed being about 2,100 and the value of the output at £4,500,000. General costs, however, have gone up about 15 per cent.—a fact which weighs heavily on the smaller mines. The enhanced value of base metals has not yet been taken full advantage of, but inquiries are constantly being made with regard to these, and in the forthcoming year there is reason to hope that there will be considerable developments in the mining of auriferous pyrites, galena, arsenic, and other minerals which have, up to date, not received the attention they deserve. Amongst the older mines, the Sheba, Worcester, and the Messina properties have reached the end of their ore reserves, and it seems certain that the first-named will have to close down within a short time. This does not necessarily mean that the mines are worked out, but that the expenses of development under present circumstances are so high that it is better business for the companies to defer further development till normal times return than to continue. The future of the Messina Mine depends entirely on the price of copper. With copper at £120 per ton the mine may continue working for some time to come, but the moment the metal falls below that value, the profits are insufficient to cover costs and depreciation. The white population that will be directly affected by the closing down of the Sheba Gold Mine is not less than 272 persons, and the trade of the district will diminish by £8,000 per month. Most of the families which make up the population have been in the locality for decades and without the mine the whole neighbourhood will be depopulated. In the case of the Worcester, the population directly affected is about 120 persons and the local trade about £3,000 per month. With regard to Messina, the question is even more serious, for a whole district and a section of the country 300 miles in length is dependent on the railway which this mine alone renders workable without great loss. I do not think it is an exaggeration to state that the white population directly dependent on this mine is over 300 persons, and that indirectly probably 1,000 persons would be seriously affected by its closing down. The operating expenses on the mine in the year under review were £245,000, so the magnitude of the trade interests involved is very great. It is difficult to see that any other mines are in a position to take the places of these properties and to absorb the population which has in the past been dependent on them, or to replace the trade that will be lost.

It should be borne in mind that though a mine may be most unprofitable to its shareholders, it may yet be highly profitable to the State. The Messina shareholders stand, I believe, to lose 83 per cent. of the money they invested in the mine, but the Union has benefited by the sum of £1,142,175, which has been spent to date in wages and stores purchased in the country. Apart from the cost of the railway construction which the company has stood "good for" and by which the country, not the shareholders, will permanently benefit, I am strongly of the opinion that the general population of the country and their representatives in Parliament should be brought to understand this aspect of the case, and that active steps should be taken by the Government to bring other mines into being to replace those that are shutting down. There are, particularly in the Barberton District, but elsewhere also, very considerable deposits of auriferous pyrites, which in the past have not been worked owing to the refractory nature of the ore. These deposits usually carry from 4 dwt. to 8 dwt. of gold and from 20 to 40 per cent. pyrites. The gold is usually contained in the pyrites and can be concentrated with it. Individually none of these deposits are very large, the reefs generally being from 2 feet to 12 feet and highly inclined. In the aggregate, however, the amount of the deposits is very great as there are numberless reefs of this sort. As a rule, arsenic is absent, and the pyrites is suitable for sulphuric acid making. Sulphuric acid is necessary in the Union and is made by the dynamite factories, who, however, import crude sulphur from Europe for the purpose. It appears to me that a very large local industry might be developed if local concentrates could be used for this purpose, but it is a matter which needs the intervention of the Government, for at present matters move in a vicious circle, the factories declining to purchase concentrates on the grounds that they cannot be assured of a constant or adequate supply, the claimholders declaring that they cannot open their mines and put up concentrating plants unless they are guaranteed a steady market. An exactly similar position prevails with regard to arsenic. The Union Govern-

ment is in desperate need of over 400 tons of arsenic per annum for the manufacture of cattle dips which cannot now be obtained from abroad. The price of arsenic is now £150 per ton. Notwithstanding this, the first producers of white arsenic are having the greatest difficulty in selling their product, and though this metal is known to exist in all the older formations of the country, no attempts are being made to prospect for or develop it owing to the distrust caused by this deadlock. In cases of this sort I believe that the only method of obtaining a prompt supply of the mineral needed is for the Government itself to offer a fixed contract price for the delivery of the mineral for a certain period. Having arranged for such a supply of the crude mineral it would be simple to get manufacturers to contract for the conversion of it into the commercial article needed. Inquiries have been received from the Imperial Government during the year for several minerals including graphite, tungsten ores, and manganese. It has been difficult, however, to take any advantage of these inquiries, for though these minerals are known to exist they have not been worked in the past and claimholders and persons who know of their occurrences are not in a position to develop their propositions on the strength of mere inquiries. If these minerals are actually required, I have the greatest confidence that they can be produced economically in this inspectorate, but it is absolutely necessary that a definite standing price for definite quality and quantity over a fixed period should be offered. I would emphasize the fact that the simple mining of more or less free milling gold ores, on which the mineral industry of this inspectorate has relied so largely in the past, is coming to an end, and that unless its place is taken by something else a great economic calamity is going to overtake the Transvaal Province. This simple mining can be replaced and more than replaced by the more complex mining of refractory ores and base metals, but this change must be facilitated by the Government. If left entirely to private enterprise, a period will occur in which simple mines have been worked out and the complex ones not exploited, and that period will be a disastrous one for the trade and revenue of the Province.

PIETERSBURG DISTRICT.

Antimony.—The antimony mines of the Murchison Range have been producing small quantities of antimonite during the year—part of this has been exported and part reduced to metallic antimony in the country. This antimony has been absorbed by the white-metal makers, and as the trade is apparently lucrative it will probably grow and become a permanent asset to the country. The United Jack Mine has been taken up by the Societe Nouvelle des Mines de Lucette, 4 Rue de Rhone, Paris, the largest producers and users of antimony in the world, but their engineers have not arrived at the mine. The prospects of the Leydsdorp District, therefore, look better than they have ever done before. The Haenertsburg and Marabastad areas have been quiet during the year. Claims are still held, but no work has been done.

Tin.—The notable feature of the year with regard to tin is the smelting of tin ores by the Zaaiploats Tin Mining Co., and this venture has proved completely successful, notwithstanding the fact that the ores treated were not considered by local experts as suitable for smelting by themselves. The output is about 250 tons per annum, and is mostly bought by the South African Railways, who manufacture white metal. No fresh discoveries have been made, but the existing mines have continued running on development ore in an extremely satisfactory manner. Zaaiploats Mine at the end of the year again encountered very good ore. Groenfontein Mine (T.C.L.) continues to find patches of good ore at intervals, while the developments on Mutue Fides, Olifants Tin Mines, and Stavoren have been surprisingly good. Leeuwpoot was in a slightly better position at the end than at the beginning of the year, and has a more certain future than the other mines. The Rooiberg Mine exhausted all its ore at the beginning of the year, and has been working from hand to mouth since.

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Arsenic and Scheelite.—During the last two months of the year the Stavoren Tin Mine commenced condensing its fume from the roasting furnace and producing white arsenic at the rate of about 1½ tons per month. This output can be largely increased as they learn the work and obtain confidence in its payability. There are large deposits of arsenic on a neighbouring farm—Rooiwal—but these are not at present worked. The Stavoren Tin Mine is continuing to produce scheelite, and the quantity of this mineral found in the workings is increasing. The company has, however, had endless difficulties in marketing the mineral, the concentrates of which it is impossible on the mine to separate entirely from the cassiterite which occurs with it. This difficulty has now, however, been overcome, and the Imperial Government has contracted to give a fixed price per unit tungstic acid and tin for the duration of the war and six months after. The shipping trouble, however, still continues, and the company is often seriously embarrassed by the refusal of shipping space for its consignments.

Corundum.—The export of this mineral has reached about 500 tons per month. It occurs as loose crystals in the surface detritus over almost the whole of the Pietersburg plateau, an area of roughly 30 miles by 40 miles. So far it has hardly been touched *in situ*, but where it has the parent rock is either a mica schist or a pegmatite. It is of great importance that these deposits should be examined scientifically by a competent geologist as soon as possible, for the surface work which is going on is destroying all the evidences of the origin of the mineral, and in a short time there will be nothing but scattered and overgrown debris heaps to show where and how it occurred. So far as I can read, this appears to be the most important corundum field known in the world and it should certainly have a permanent future, but if it is allowed to be destroyed by the present methods of collection without any records being kept, it will be extremely difficult in future years to reopen it in a systematic way.

Mica.—A certain amount of mica from the Leydsdorp district is now being sold. As before reported to you, the mica is of excellent quality and occurs in what should be payable quantities. The only difficulty being the marketing, the usual vicious circle prevailing as in the cases of arsenic and pyrites, etc.

PRETORIA DISTRICT.

South African Alkali Co., Ltd. (Pretoria Salt Pan).—Up to the end of 1916 only the beds of trona or massive crude carbonate of soda in this pan were worked. These beds are erratic in character and limited in extent, and it was obvious that the real wealth of the pan lay in the mud with which the crater-like "pipe" is filled to an unknown depth. It is possible—and even probable—that the first 50 feet of this mud in the pan contains £2,000,000 worth of soda salts, in which case the pan is as valuable an asset to the State and to the shareholders as a rich diamond mine. During the year a satisfactory process for extracting the soda from this mud has been evolved and a small plant was at work. Unfortunately the unprecedented rains of this season have covered the bed of the pan with many feet of water and seriously impeded all operations. The inherent richness of the pan is, however, so great that the numberless difficulties which are certain to occur in opening a new industry are equally certain of being overcome.

Diamonds (The Premier Mine).—There is nothing to remark on, except that it continues the even tenour of its way.

Komeelfontein.—The diggings continued throughout the year to support a varying population of from 200 to 500 diggers. The average earnings of these men is under £12 per month, but as most of them work on half-shares for a supporter, it is doubtful if the average man touches £6 cash per month. I regret to have to state it, but the alluvial diamond diggings are a manufactory of poor whites and probably do far more harm to the State in this respect than the wealth they recover does good.

Marble.—The marble deposits on "Marble Hall" in the extreme east of the district have been opened during the year and the marble is now on the market. It is of excellent quality and should in the

future, when the transport difficulties have been overcome, supply the whole needs of the Union. The price paid for marble is so high that even now, with ox transport, the quarry is more than profitable.

Iron.—A strong company has been formed to exploit the iron ores on the town lands of Pretoria, and a blasting furnace plant is in course of erection. The intention is to turn out nothing but foundry pig at first, and to grow from that in any direction which seems most profitable. The venture has a good chance of success.

MIDDELBURG DISTRICT.

Coal.—The bunker trade has developed enormously during the year, but otherwise there is nothing of interest to note, except that the mines continue to work satisfactorily. Enteric fever is endemic on most of the collieries and continual outbreaks occur, otherwise the health of employees on these mines compares favourably with that of any industry in the world.

LYDENBURG DISTRICT.

Asbestos.—This district has provided the most sensational development of mining of the year. The asbestos mines of Penge and the neighbouring farms have been developed most successfully and the deposits appear to be larger than any others known in the world. An output of 500 tons a month was obtained and could have been maintained indefinitely but for the heavy rains which have rendered transport quite impracticable. This asbestos industry may go a long way towards replacing the simple free milling gold mining of the past, which as before remarked is gradually coming to an end.

Gold.—The Transvaal G.M. Estates have been in low water during the year, their old mines, with the exception of Vaalhoek and Elandsdrift, becoming exhausted without equivalent new developments. The small mines in the district continue, however, just as in former years, and show little signs of exhaustion.

BARBERTON DISTRICT.

Gold.—The obvious fact that the Worcester Gold Mining Co. and the Sheba Gold Mining Co. are coming to an end and that the Fortuna Mine is working under difficulties has had a most depressing effect on the district. Personally, I consider that the Barberton district has room for a vast expansion of the mining industry, but this will not occur so long as the free-milling simple mining of the past is relied on. The deposits of this district are nearly all of pneumatolitic origin and the minerals occur as saturations and impregnations of the country rock, difficult to find, more difficult to follow, and usually only to be extracted by calcination and chemical processes. The old prospectors and inhabitants of Barberton are absolutely ignorant of all matters pertaining to this class of mining, and it is only now that Mr. Dicey, following Mr. Dicey's lead, has developed a similar deposit which he calls the Maid of De Kaap, at the back of the Consort Mine—this property has been known and despised for years, but developed by Mr. Andrews during the last six months, several thousand tons of rock, well over 10 dwt. in value, are now in sight and more is being developed daily. Personally, I am convinced that many of the older and abandoned properties will develop equally well if they are once exploited on intelligent lines with some understanding of their mode of origin. Mr. Hall's memoir (J.S.O. Memoir No. 9) on the Barberton goldfields is highly appreciated by those managers in the district who are educated enough to understand it, and I believe that it will do an immense amount of good in the district as it is the first scientific publication treating the district as a whole and describing the method in which the mineralisation occurs.

(To be continued.)



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THE WEEK IN THE SHAREMARKET.

A Featureless Market—Continued Depression.

THE Stock Exchange was closed on Saturday. On Monday morning there was a general feeling of expectancy as to how the market would take the war news. The result was disappointing. Nothing was done at the opening. There was a little more activity at the call and prices generally were the turn harder. The Stock Exchange Committee, on the advice of the Medical Officer of Health, has decided to make no change in their hours of business, consequently there will be no early closing and the call will be held at the usual hour. During the morning there were sales of African Farms at 17s. 6d. and New Modders at £23 12s. 6d. Alkalis advanced to 52s. buyers, with sales of odd lots at 54s. Notwithstanding the continued satisfactory war news and the announcement that the prevailing epidemic was being mastered, the market on Tuesday remained in a hopelessly depressed condition. The small gains of the previous day were lost on the call with one or two exceptions, such as Modder Deep and Leeuwpoots. There was further slackening of business on Wednesday morning, actual sales again falling to the dozen limit. Modder Deep, Leeuwpoot, Government Areas, Springs and Van Ryn Deep were all lower. Thursday brought no improvement. The only active stock was Geduld Proprietary, in which numerous sales were booked at 40s., 39s. 9d. and 39s. 6d. Modder Deeps, Lace Props, Daggafonteins and Mines Selection were slightly better. Alkalis also made a further advance, but the favourites, including Government Areas, Springs and Van Ryn Deep, were dull and unchanged. The outside business for the week was limited to:—Sales: Monteos, 24s.; Union Tins, 5s. 6d. to 5s. 10d.; Mauss Syndicate, 40s. odd lots; Sakalavas, 10s. 1½d.; Phoenix, 1s.; New Farms, 2s. 1d. Sellers: Makanyene Diamonds, 42s.

On Friday morning prices were again easier, with the solitary exceptions of Alkalis and Lace Props, as the following list of alterations will show:—Sales: African Farms, 17s. 3d.; East Rands, 4s. 3d.; Leeuwpoots, 31s.; Modder Bs., £8 5s.; New State Areas, 20s. 3d.; Sub Nigel, 27s. 6d.; Springs, 70s. 9d.; West Springs, 24s. 6d.; Options, 10s. 9d. Buyers and sellers: Lace Props, 12s. 2d., buyer; Randfontein Deeps, 5s. 6d. and 5s. 10d.; Rooibergs, 9s. 11d. seller; S.A. Lands, 6s. 7d.—6s. 9d.; Alkalis, 57s. 6d.—60s.; Van Ryn Deeps, 70s.—70s. 6d.; Zaaipplaats, 16s. 8d.—16s. 9d.

	Fri., 11th.	Mon., 14th.	Tues., 15th.	Wed., 16th.	Thurs., 17th.
African Farms . . .	11 2*	17 3	17 4*	17 3	17 4
Anglo-Amer. Corp. . .	—	—	32 9*	—	32 6
Apex Mines	7 6*	7 6*	7 6*	7 8†	7 6*
Bantjes Cons. . . .	3 1*	3 4*	3 4*	3 5*	3 3*
Brakpan Mines . . .	74 0*	73 0*	—	75 0A	75 6†
Breyten Colls. . . .	10 0*	—	10 0*	12 0†	10 0*
Brick and Potter. . .	—	3 9*	—	—	—
British South Africa	17 6*	17 6*	17 6*	18 6†	18 6†
Bushveld Tins . . .	0 7*	0 7*	0 8*	0 8*	—
Cassel Coals	30 0*	31 0*	31 0*	32 6*	36 0*
Cinderella Cons. . .	4 3*	4 6*	4 6*	4 0*	4 6*
City and Subs. . . .	8 0*	7 9*	7 9*	8 0*	8 0*
City Deeps	52 6*	53 0*	53 0*	54 0†	54 0*
Cloverfield Mines . .	9 6†	9 6†	9 6†	9 6†	9 6†
Clydesdale Colls. . .	19 0*	19 0*	19 0*	19 6*	20 0*
Concrete Construc. .	—	5 0*	5 0*	5 3*	5 0*
Con. Investments . .	19 6*	20 0*	20 0*	20 0*	—
Con. Langlaagtes . .	19 3*	19 9	20 0†	20 0†	—
Con. Main Reefs . .	11 9*	11 9*	11 9*	11 9*	12 3
Con. Mines Sel. . . .	25 0*	25 0*	25 0*	25 0*	25 6*
Coronation Colls. . .	43 0*	43 0*	45 0	—	44 0*
Coronation Frees. . .	—	1 1*	1 3	1 1*	1 1
Crown Dias.	6 0†	6 0†	—	—	6 0†
Crown Mines	37 6*	38 9*	37 6*	—	—
Crown Mines Deb. . .	—	£100*	£100*	£100*	£100*
Daggafontein Mines	23 0*	23 0*	23 0*	23 0*	24 0
Do. Options	4 0*	4 3*	4 6	4 3*	4 3*
Durban-Road. Dp. . .	7 6*	7 6*	7 6*	7 6*	7 6*
East Rand Coals. . .	2 0*	2 0*	2 0*	2 0*	2 0*
E.R. Minings	19 0*	20 0†	20 0†	19 0*	20 0†
East Rand Props. . .	4 6*	4 0*	4 0*	4 0*	4 3*

*Buyers. †Sellers. AOdd lots. BEx London.

	Fri., 11th.	Mon., 14th.	Tues., 15th.	Wed., 16th.	Thurs., 17th.
Eastern Golds . . .	1 3*	1 3*	1 3*	1 0*	1 1*
Ferreira Deeps . . .	—	—	8 6*	8 6*	8 6*
Frank Smith Dias. .	3 6†	3 4*	3 6	3 4*	3 5*
Geduld Props. . . .	38 3	39 3	39 0	39 0*	39 6
Glencairns	1 6*	1 6*	1 6*	2 0†	2 0†
Glynn's Lydenburg .	23 9	23 9*	23 9*	24 0*	24 0*
Govt. Areas	91 9	92 0	91 6	90 6*	90 6*
Jupiters	4 0*	4 3*	4 3*	4 0*	1 3*
Klerksdorp Props. .	3 0	3 0*	3 0*	—	3 0*
Knight Centrals . .	4 3*	4 4*	4 4*	4 6	4 6
Knights Deeps . . .	5 0*	5 0*	6 0†	5 0*	6 0
Lace Props.	11 6*	11 10	11 10*	11 10*	12 0*
Leeuwpoot Tins . . .	31 3*	31 3*	32 0	31 9	31 3*
Lydenburg Farms . .	9 2	9 0*	9 0*	9 2	9 0*
Middelvlei Est. . .	1 0*	—	—	—	1 1
Modder B's	165 0*	165 0†	168 0†	160 0†	—
Modder Deeps	148 6*	147 6*	149 0	148 0	149 6
Modder Easts	21 6	21 6*	21 6	21 3*	21 3
Do. Options (3yrs.) .	6 7	6 6*	6 7*	6 6*	6 6*
Do. Options (4yrs.) .	7 6*	8 0†	8 0†	7 7	7 7†
Hume Pipes	34 6	31 6	35 0†	33 6*	33 6
Trans. and Del. . . .	50 0*	50 0*	50 0*	50 0*	—
Natal Naviga. Colls.	—	19 0*	19 0*	19 0*	19 0*
National Banks . . .	—	£14*	£14*	—	£11*
New Boksburgs . . .	—	1 0*	—	—	—
New Eland Dias. . .	23 0*	23 0*	23 0*	23 0*	—
New Era Cons. . . .	10 0*	10 0*	10 0*	10 1*	10 3*
New Geduld Deeps .	5 8*	5 9*	5 9*	5 9*	5 9*
New Heriots	13 0*	—	12 6*	12 9*	12 9*
New Kleinfonteins .	13 6*	14 6	14 6†	13 9†	—
New Modders	£27/6/3*	£27½*	£27½†	£27½*	—
New Unifeds	—	—	—	—	5 6*
Nigels	—	4 0*	4 6*	4 0*	4 6*
Nourse Mines	17 0*	17 0*	17 0*	17 0*	17 0*
Pretoria Cements . .	72 0†	72 0	72 0	72 6	73 0†
Princess Estates . .	3 1*	3 0*	3 1*	3 3	3 3
Rand Colls.	2 6*	2 6*	2 6*	2 6*	2 6*
Rand Klips	10 0*	10 0*	10 9	10 9†	10 0*
Rand Nxeleus	1 3*	1 3*	1 3*	1 4*	1 5†
Rand Select. Corp. .	86 0*	86 0*	86 0*	86 6*	—
Randfontein Deeps .	5 0*	5 9*	6 0†	5 9*	5 11
Randfontein Est. . .	14 9*	14 9*	14 9*	14 9*	14 9
Rooibergs	-11 0*	11 0*	11 0*	10 6*	10 3*
Rodepoort Uniteds .	2 9*	2 9*	2 9*	3 0*	3 0*
Ryan Nigels	2 9*	3 0*	—	—	—
Shebas	—	1 0†	—	1 0†	—
Simmer Deeps	—	—	—	1 6*	—
S.A. Breweries	33 9*	35 0	35 0	35 0†	35 0†
S.A. Lands	6 8*	6 10	6 11	6 9*	6 9*
Springs Mines	71 3	71 6	71 6	71 0	70 6*
Sub Nigels	27 6*	28 0	27 6	27 6*	27 6*
Swaziland Tins . . .	31 6†	28 0*	31 0†	31 6†	—
Trans. G.M. Est. . .	—	16 0†	11 0*	16 0†	16 0†
Van Ryn Deeps . . .	71 0*	71 0	71 0	70 6*	70 6*
Village Deeps	—	16 6*	18 0†	18 0†	18 0†
West Springs	24 9	25 3	25 0	21 9	24 9*
Western Rand Est. .	2 0*	2 0*	—	—	—
Witbank Colls. . . .	50 0*	—	—	—	50 0*
Wit. Deeps	9 9*	9 6*	9 9*	10 0*	10 3*
Wolhuters	4 0†	4 0†	4 0†	—	4 0†
Zaaipplaats Tins . .	16 3*	16 0*	16 6	16 7*	17 0
Union 5 per cent. . .	£105½	£105½*	£105	£105*	£104½*
New States	20 6*	20 6A	20 6*	20 6*	20 7½
S. Van Ryns	13 9*	13 9*	13 9*	13 6*	13 6*
De Beers Def.	—	£16½*	£16½*	£16*	£16*
De Beers Pref. . . .	£13*	£13/13/9*	—	—	—
Standard Bank . . .	£12*	—	—	£12*	£12*
S.A. Alkali	48 6	50 0	52 6A	53 0*	55 0*

*Buyers. †Sellers. AOdd lots. BEx London.

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Engineering Notes and News.

RAND MINE ACCIDENTS DUE TO ROPES BREAKING.

THE annual report of the Government Mining Engineer deals with fatal accidents due to ropes breaking in the following passages:—Fatal accidents due to ropes, chains or couplings breaking: There were ten accidents and 12 deaths under this head in 1917. These totals show a decrease on those of the previous year, when there were ten accidents and eighteen deaths. None of the fatal accidents included in the above occurred while persons were travelling, but the breakages led to cages, skips, buckets, or trucks running away, and to the conveyance or its contents striking persons. In eight cases it was the rope that broke, in one it was the coupling, while in the other it was a badly made short splice that pulled out. The coupling and two of the ropes broke owing to some jam in the haulage, in other ropes it was due to some damage resulting from bad coiling, defective leads, or being run over. In the other two cases of rope fracture the supervision was at fault, and the ropes should not have been continued in service. Of the twenty-nine cases of ropes (or couplings) breaking by which persons were usually drawn, twenty-four of which refer to the winding rope itself, six resulted in casualties. Twelve were caused by overwind or runaway, and fifteen were due to derailment, jam or collision, in shaft or tip. In one case where the connection was broken, due to an overwind, the safety catches successfully held the cage. One rope broke on account of its jumping its sheave, and the remaining one because it was worn out, mainly through internal corrosion. Arising from this latter accident, which occurred fortunately when no persons were travelling, the following circular was issued to the managers of mines:—"It has been found that wire-ropes of compound construction subjected to corrosive agencies, as is particularly the case when these ropes are employed for baling acid water, are liable to deceive engineers as to the strength remaining in them. This is especially the case if the absolute thoroughness of the examination is at all departed from. Where reduction of diameter, or circumference, of the rope has taken place incommensurate with the external evidence of wear, the part of the rope under examination should first be fully loaded and, secondly, relieved of all load. Any noticeable difference in circumferences under these circumstances and the slackening of the outside wires when the load is off will indicate that internal corrosion is present. The extent of corrosion inside the strand can only be estimated by the slackness of the outside wires. The corrosion between the strands can be further examined by untwisting the rope or displacing the strands sufficiently with a marlin spike. Engineers are apt to imagine that reduction in size of a rope may be due to some relatively unimportant collapse of the hemp core. In a test at the Mines Department mechanical laboratory of a 1.28 in. diameter rope, the hemp core was entirely removed for about six feet of the length. The specimen was gradually loaded up to 30 tons, but, beyond a very slight increase of the lay from 10½ in. to 11 in., subsiding after the test to 10¾ in., there was practically no alteration in the shape or size of the rope. No observer unacquainted with the circumstances would have imagined that the core had been removed or even disturbed. In recent tests of corroded ropes the following results were obtained:—

Original Diam.	Original Breaking Load. lbs.	Diam. at Test. ins.	B.L. at Test. lbs.
1.5 in. (wires .099 in.) ...	222,208	1.41	191,960
1.5 in. (wires .099 in.) ...	222,208	1.4	166,660
1.5 in. (wires .099 in.) ...	222,208	1.3	137,260
1.5 in. (wires .099 in.) ...	222,208	1.23	66,880
1.5 in. (wires .102 in.) ...	220,000	1.22	97,260
1.25 in. (wires .115 in.)...	148,700	1.23	137,660
1.25 in. (wires .115 in.)...	148,700	1.0	78,920

"In all the above-mentioned cases the outside wires were less than half-worn, but the internal corrosion was excessive, most marked inside the strands. The wires were also brittle. Experience has shown that the remarks concerning corrosion on the certificate of six-monthly tests are taken as merely applying to the test specimen and are not considered as having a bearing on the state of the rest of the rope. This information, however, should not be neglected, and the condition of the rope adjacent to the place where the test piece was cut off should be ascertained. It is *not usual* for corrosion to occur only at one spot in a winding rope." In two cases persons were being raised or lowered in incline shafts by the ropes that broke. In the first case, a downgoing skip became derailed, and the resulting slack rope fouled and derailed the skip in the next compartment which was taking persons to the surface. This skip jammed on derailment and none of the occupants was injured. In the other case, a good rope broke just after starting to lower the onsetter and three natives in a skip. There was probably some temporary obstruction on the rails, this leading to a subsequent free fall, the nature of the fractures of the wires being in keeping with this theory. The skip ran away and came to rest finally at a station, having knocked out several dividers and smashed the pump columns. The men were thrown out on the track, and two escaped without injury. The skipman had a slight scalp wound, and one native sustained a compound fracture of the leg. In addition to these cases of fracture, four winding ropes were seriously damaged owing to overwind or runaway. There were eleven breakages of winding ropes (or couplings) used exclusively for the raising of materials, due to causes similar to those above mentioned.



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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Business in a State of Suspense—Country Enquiries Indifferent—Brokers Put Out Feelers—Reserve Stocks on Mines—Second-hand Material Unknown and Doubtful—Peace Problem.

THE peace news is coming very quickly, as Germany's first reply came one day and Turkey's peace note another—both in one week. Therefore it is not surprising that the state of business is one of suspense, more particularly as the Commercial Exchange is closing daily at one o'clock and most of the offices also very early, on account of the influenza. It is surprising how the country enquiries dropped away to zero; presumably because the dealers and merchants are awaiting a lead from Johannesburg as to what is likely to happen in the near future. So far Johannesburg has very little to say, excepting that no one can buy anything cheaply, neither can they sell. Naturally the brokers are not altogether idle, but their chief business seems to be to put out feelers as to what offers can be obtained for certain lines that uneasy speculative holders would like to sell. In fact, the whole community holding stocks wish to sell and so ease themselves or make room for others at high prices on the way, or already ordered and paid for in Canada or America. There is an easier tendency throughout all commercial circles, but one cannot find out anything resembling bargain values, as brokers and traders are very reticent on that point. A responsible broker states that when a strong firm takes the lead in buying, the flabbiness of our market would quickly respond, even quicker than it went into the doldrums. The peace problem is the one that cannot be shelved, and the next in importance is what the chief buying office is doing. The chief buyer is very keen as to the prices he pays, more particularly in regard to the unknown or doubtful values of second-hand materials. Another point is how long will it take to clear off the reserve stocks on the mines. It was said a long time ago, from a semi-official source, that it would take eighteen months after peace, as there was no desire to seriously interfere with the trade of the merchants when reducing the reserve mining stocks down to normal again. In regard to peace, it may be recalled that in the American-Spanish war Spain sued for peace on July 26th, 1898, but hostilities did not terminate until December, 1898. In the Franco-Prussian war it took from October, 1870, to

January, 1871, to arrange a settlement. The Russian-Japanese peace negotiations took from June, 1905, until the end of August in that year. Hence, according to past experience several months must elapse before anything can be definitely fixed up, and so far the fixing up does not seem much nearer. Of course, when it really starts in very earnest the wireless messages will facilitate matters and so do as much perhaps in weeks as it took months on previous occasions.

Peace insurances at Lloyds: According to a Reuter's message from London on Tuesday, Lloyds are charging £42 per cent. for the payment of total loss if peace is declared before December, 1918, and £63 per cent. if it is declared before March 31st, 1919. The chief idea of such insurance is where a works or business is concerned in connection with war materials, that comes to a sudden stop when peace does occur.

IRON, STEEL AND HARDWARE.

A dealer in iron and steel states this is the worst month he has had for nine months and more. He attributes the sad falling off to the influenza epidemic and in a measure to his country customers waiting to see the result of the peace overtures. There is an easier tendency in flat galvanised iron at about 90s. to 100s. per 100 lbs., according to gauge. Square shovels are very firm at 140s. per dozen; large quantities are always in demand for the railways and municipalities. The round nose variety are a little cheaper at 97s. 6d. to 102s. 6d., but these are expected to touch 110s. within a month unless further supplies arrive from Canada, and according to all accounts there are more on the way, but the information is rather hazy. Ordinary barbed wire, as apart from the war kind, is 45s. for 410 yards and 55s. for 610 yards, as compared with 15s. 6d. and 17s. 6d. in pre-war days. There are all kinds of mining material being handled by brokers, but very little business. Imported bar and round iron is supposed to be a little cheaper round about 70s. instead of 75s. Wire nails continue firm, but certainly not dearer, as it is understood that there are good supplies from Canada on the water.

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THIS RANSOME ENGINE

Is intended to work at 100 lbs. pressure. **THE CYLINDERS** are bolted to the main side frames, and are covered with wood and sheet steel lagging. The cylinders are connected by a steam pipe below the floor and provided with an efficient starting valve. **THE MAIN FRAMES** consist of four outside cast-iron girders and one centre girder, all bolted together. **THE DRUMS**: The engine is fitted with double drums, both being loose on the shaft. The side flanges and barrels are made of mild steel plates and the drums have cast-iron centres, bushed with gunmetal. **THE CLUTCHES** and jaws are of cast steel, the jaws being bolted to the cast-iron drum centres. Each Drum is provided with a separate clutch. **THE BRAKES**: The Drums are fitted with powerful post brakes which are worked by foot levers. **THE GEARING**: The main spur wheel is of iron and is cast in one piece, and the pinion of cast steel, both being double shrouded up to pitch circle. The pinion is in halves. **THE GUIDES**: The Engine is fitted with bored guides which are bolted to the main side frames. **THE CRANKSHAFT AND DRUM-SHAFT**: Both the Crankshaft and Drumshaft are of best mild steel and of ample diameter. **THE BEARINGS**: These are five in number two for Engine crank shaft and three for drumshaft, and they are all of large surface. Complete with depth indicator.

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THE TREND OF BUSINESS.

There is a good deal of camouflage about prices, as they are like "the will o' the wisp," the more you chase them the more you get entangled. All that can be said is that values are easier. No doubt people want to lessen their stocks instead of buying, hence many more sellers than buyers. In selling goods the reduction will take place in the cutting of profits and not in the actual landed costs in Johannesburg, either for the present or in the immediate future, as obviously merchants have dearer consignments on the way. In this connection the information from the chief buying office is that most of the goods ordered by the merchants from overseas for the mines have arrived here and delivery has been taken.

OILS, PAINTS, LEAD AND GLASS.

There are no alterations in the last recognised quotations. It is said that brokers are offering white lead from Capetown, as well as paints in oils. There seemed an anxiety to push business from Capetown, but the offers were not sufficiently tempting. The wholesale price from merchant to merchant for linseed oil is 14s. 6d. per imperial gallon. This happened prior to a cable being received from India stating that linseed oil exports are prohibited from there, excepting for orders already booked. The quotation for a matter of sixpence to ninepence a gallon is doubtful, as people are so apt to quote to suit their books. Turpentine is still very scarce with problematical price, as a few cases were said to have been picked up in the country at 92s. 6d., and then they had to be brought into town by the traveller's own conveyance. There is a little sheet and plate glass in town, but most of the British consignments recently arrived have been under bespoke orders; however, there is some on hand for casual orders until perhaps the end of the month. The British advices are not encouraging for future orders, as the works there have been so depleted of men for the front, and women cannot handle the plate glass trade.

TIMBER AND GALVANISED IRON.

Country business has had a decided check, presumably on account of the peace rumours and the influenza. The town is also dull, although the number of business premises approaching completion keeps up the demand for the best timber very well. The Reef is dull in the extreme. Prices are much the same, but complaints and severe criticism are ripe as to the price of South African white and yellow wood deals being 1s. 6d. per foot. There is still some timber offering from Sweden. It seems rather more freely, judging from the cable information as the exchange between London and Sweden went about 2s. per £ in favour of London last Monday and is now 15'90 kroner, that is about 18s. for the English sovereign, which was 20s. 6d. in pre-war days. The

explanation for the decline is that Britain stopped sending coal to Sweden, therefore had no substantial account as a set-off against the timber bill. In addition to this exchange being more favourable the war risk is only 2½ on values, whereas recently it was 4½ per cent. Galvanised roofing iron is very firm, therefore a consignment slightly damaged by sea water realised the decent price of 2s. per foot.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 2s. to 2s. 1d.; flooring, 4½ x ¾ and 6 x ¾, 11d. to 11½d. per sq. ft.; ceilings, 6 x ½, 7d. to 7½d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. 6d. per cub. ft.; clear pine, ½in. x 12in., 1s. 6d. per foot; 1in. x 12in. 2s.; teak, 25s. to 26s. per cubic foot; shelving, 1s. 3d.; Jarrah, 13s. 6d. c. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 2s. to 2s. 1d. ft.; beaver boards, 11d.; galvanised iron, 24 gauge, 6ft. to 10ft., 2s. 2d. to 2s. 3d.; 11ft., 2s. 3d.; 12ft., 2s. 3½d.; 26-gauge, 6ft. to 8ft., 1s. 10d.; 9ft. and 10ft., 1s. 11d.; flat galvanised, 24 and 26-gauge, 95s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 0s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. to 15s. O.M. gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 110s. 2¼ 1-5 galls.; 10-1's; 5-6 imp. tins, 120s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ½in., 8s. 6d.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin quotations unobtainable; petrol, 39s. 2d. 2¼ I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 47s. 6d. per case; cylinder, 37s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11b.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. 11b.; nitrate lead, local, £55 10s. ton; nitrate (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, 100s. to 110s. 100 lb.

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IRON AND STEEL.—Imported, ½in. and 3-16in. round iron, 95s. to 100s.; ¾in. do., 85s.; ¾in. steel, round, 80s.; ½in. round iron, 85s.; do. steel, 72s. 6d.; ¾in. round iron, 72s. 6d.; do. steel, practically none in town; ¾in. round iron, 65s. to 67s. 6d.; ¾in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ½in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 1s. 9d. lb.; ¾in. dia., 1s. 6d., 3½in. and up long 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb; ½in. dia. and 2½in. up long, 75s. per 100lb.; ¾in. diameter up to 2½in. long, 85s. per 100lb.; ¾in. dia. 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 55s. 100 lb.; ¾in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in. 95s.; 1½in. and 1¼in., 85s.; 1½in. to 1¼in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ½in., 75s. to 80s.; ¾in., 72s. 6d.; 2in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s., 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction kinoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

The paper "On experiments made with a view to reducing the consumption of explosives and increasing the fathoms broken per machine shift in machine stoping," by Mr. T. H. Bayldon, was discussed at the last meeting of the South African Institution of Engineers. Mr. W. Waters said he considered that Mr. Bayldon's paper was a most important one, and most interesting. If the author could prove that the blasting of alternate benches would result in the more economical breaking of rock owing

to the fact that the explosives would have a much better chance of doing more efficient work, then the system advocated became highly important, seeing that less explosives would be used for a given tonnage. He would like the author to explain the matter of tonnage. In a stope where there might be twenty benches, and where it had been the custom to blast each bench daily, Mr. Bayldon proposed to blast only ten benches daily. No doubt the author had his own ideas as to how he was going to obtain his full tonnage. There might be plenty of room in his mine to work additional stopes, but some mines might not have sufficient development to do so. He would be glad to learn how this point was to be dealt with. The saving of tonnage cost to the mine was, no doubt, highly desirable, but an equally desirable object was the saving of explosives, seeing that every day brought greater difficulties in obtaining glycerine and other necessary ingredients used in the manufacture thereof. Mr. J. W. Kirkland (vice-president) said the Editorial and Papers Committee had been very much disappointed in the contributions given by the mining members of the Institution on the subject of this paper, which, he agreed with the previous speaker, was of the greatest importance. The question of economy in blasting rock underground was one that had never been solved. Here they had a lead from Mr. Bayldon. If the members were not ready to-night with contributions to the discussion, he hoped that at the next meeting they would have more ideas with regard to economy in blasting underground. After all, almost the whole of the cost of mining occurred under the surface, and the savings to be made were in the direction that Mr. Bayldon had indicated—whether exactly in the way he had shown or in some other way he did not know; but he did know that their members had much at stake in the matter of economy underground. He thought they should have further discussion in order to determine whether Mr. Bayldon's system of the alternative blasting of faces and of bench working in stopes was practical. Mr. Bayldon took the case of a large mine, the Village Deep; but the directions of economy for the great industry here were on the general line of his paper, and it would be very disappointing if they did not get some contributions from those members who were competent to consider this question and to contribute thought and ideas about it. The chairman hoped that mining engineers would say something practical on the matter under consideration. Mr. Bayldon, he was sure, would also feel disappointed if they did not give some lead whereby further economies might be attempted.

Company Meetings.

SWAZILAND TIN, LTD.

Mr. H. C. Boyd presided over the annual meeting of shareholders in the Swaziland Tin, Ltd., on October 10, held in the board room of the Corner House. The share representation totalled 44,129 out of an issue of 82,000.

In moving the adoption of the report and accounts for the year, the Chairman said:—It is with great regret that we have to record the death of Mr. Francis Oats, who was a director of this company from its inception and always took the utmost interest in its affairs. Owing to the high price realised of just over £300 per ton of metal, the net profit for the twelve months ended June 30 last with which the report before you deals was £45,404—outstandingly the largest ever made by this company. In respect of the usual base metal royalty and the excess profits tax recently imposed by the Swaziland Administration an amount of £5,101 has been set aside, £3,300 being provision for the latter. This we regarded as ample, as it is clearly understood when the idea of an excess profits tax was first mooted that due allowance would be made for our increased scale of operations, and we remained under that impression after publication of the proclamation imposing the tax. The amount of ground handled by us during the past year exceeded that treated during the year ended June, 1914, by some 55 per cent., and as we are now dealing with a considerably lower grade it is clear that a very appreciable amount of our now increased profits arises solely from our own exertions. We have just learned that the Swaziland Administration proposes to make little or no allowance in respect of this, and claims £7,900 as the amount of the excess profits tax. We can but trust that due consideration will be given to the representations which we are mak-

ing on the subject. The amount distributed in dividend for the year was £28,700, the net debit to capital account was £95, and the balance carried forward increased to £27,775. The June shipment, which was unrealised at the close of the financial year, yielded some £20 per ton more than the amount for which credit was taken in these accounts.

LITTLE TROUBLE FROM RAIN.

The consulting engineer's and manager's reports as usual give full information about the past year's operations, the results from the various working places—now somewhat increased in number—being set forth in detail. Wonderfully little interruption was caused by the heavy rainfall of the year, some 92 inches, or double the normal—over 7 inches falling on one day in February. Nearly 94,000 cubic yards were treated monthly, a very considerable increase compared with the past records. The yield per yard decreased to .84 lb. of concentrate or .6 of metal, while the cost per yard was but a fraction of a penny higher, which is very creditable to the management, having regard to the present price of stores and considering that expenditure on prospecting and on ore concentration increased—no less than 11,305 feet of drilling having been accomplished, while the loss on dressing the concentrate was much higher than formerly owing to the large amount of iron in that from Manzane Creek. The consulting engineer states in his report that there were at the close of the financial year 3½ million cubic yards of an average recoverable value of .68 lb. metallic tin per yard actually proved, while a large amount of possible tin-bearing ground remained to be treated. Compared with the last statement in this respect, the vantage is appreciably in-

creased and the value reduced, as under present circumstances lower grade ground can be profitably treated, and is therefore included. Evidently the British Government has taken steps to fix the price of tin, as the Straits Trading Company, to whom we generally sell, have recently advised us that the purchase price is to be £292 10s. per ton of metal till further notice. Hitherto they have sent constantly varying prices, according to the state of the market. If there is no further reduction in the price, therefore, the above proved ground in reserve alone assures our securing highly satisfactory results for about four years.

PROSPECTING AND DRILLING.

Prospecting and drilling have proceeded actively, and one of the encouraging results of this work has been the proving of a considerable area of ground at a new working place, Alice Creek, of a value appreciably above the average. It will probably be necessary to instal another power line for the efficient treatment of this creek. The smelting of a small quantity of our concentrate has not yet gone far enough to reach any definite conclusion. During last July and August, 194,500 cubic yards were cut, yielding 65 tons of concentrate and an estimated profit with adjustments of some £7,500, or considerably more than double the profit earned during these months in 1917. The September results are not yet available, except that the cut was 102,500 cubic yards. To Mr. Garrard, our consulting engineer, Mr. Kelly, our manager, and the staff generally, we are indebted for the excellent work accomplished during the past year.

The report and accounts were adopted, and Messrs. C. Distel and M. Hennet were re-elected to the directorate. Messrs. Alex. Aitken and Carter were re-elected auditors. This concluded the business.

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ANDREW, RESTIEAUX & CO.

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BARTLE & CO., LTD.

Loveday House, Johannesburg. 'Phones 3553-4. Sole Agents for Sanderson Bros. & Newbould, Limited, Sheffield; F. Reddaway & Co., Ltd., Manchester; John Shaw, Ltd., Sheffield; J. W. Roberts, Ltd., Leeds; Gimson & Co., Ltd., Leicester; T. Lister & Co., Ltd., Brighouse; John Davis & Son, Ltd., Derby; McLachlan and Co., Ltd., Darlington; The Cincinnati Bickford Tool Co.; The Lodge & Shipley Machine Tool Co.; The Pittsburg Valve and Fittings Co.; F. Bartle & Sons, Carn Brea; and many other well-known British and American Manufacturers.

BRITISH GENERAL ELECTRIC CO., LTD.

Corner Loveday and Anderson Streets, Johannesburg. Electrical Plant and Supplies of all descriptions. 'Phones 4242-4243; Telegrams, "Current"; Box 2406. Branches at Cape-town, Durban, Bulawayo, etc.

HUBERT DAVIES & CO., LTD.

Electrical and Mechanical Engineers, for all kinds of Electrical Machinery and Supplies. Johannesburg, Durban, Cape-town and Salisbury (Rhodesia).

FATTI'S S.A. MACARONI FACTORY.

Fatti's Macaroni Factories are the suppliers of the much-appreciated Soup-Macaroni for the Mine Boys. They inform the Mine and Compound Managers that in spite of the present high cost of the flour their price for this healthy and very nourishing food has been kept at the pre-war level, thus making MACARONI the MOST ECONOMICAL food of the present time. For orders and quotation please apply to Box 1139, or 'Phone 962, Johannesburg.—L. Fatti and Co., Ltd.

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46-47, Cullinan Buildings. 'Phone 5900, Johannesburg. Cast Steel Gyrating and Jaw Crushers and Crusher Spares, Wheels and Axles, Pedestals, Rollers, Pulleys and General Steel Castings.

ROBERT HUDSON & SONS, LIMITED.

Works: Gildersome Foundry, near Leeds. 83-4, Cullinan Buildings, 'Phone No. 1731. Telegraphic Address: "Rale-trux." Manufacturers of all classes of Light Railway Material for Mining and Contractor use. Rails in all weights per yard. Switches and Crossings, Standard Trucks of various capacities kept in stock.

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REUNERT & LENZ, LTD.

Consolidated Building (3rd Floor), Johannesburg; P.O. Box 92; Telephone No. 3061. Sole Agents for North British Locomotive Co., Ltd.; Leeds Forge Co., Ltd.; Babcock and Wilcock, Ltd.; Belliss and Morcom, Ltd.; Davidson and Co., Ltd.; Frank Pearn and Co., Ltd.; "Atlas Rock Drills," John Stephens and Son, Ltd.; E. and W. Lucas, Ltd.; John Spencer and Sons, Ltd.; and many other high-class British Manufacturers.

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S. SYKES & CO., LTD.

Southern Life Buildings, Johannesburg. Telephone No. 2190. P.O. Box 2303. Telegrams: "Psyche." Sole Agents for Robey & Co., Ltd., Crossley Bros., Ltd., E. R. & F. Turner, Ltd., Worthington Pump Co., Ltd., C. A. Parsons & Co., Ltd., Crompton & Co., Ltd., Reyrolle & Co., Ltd., and Sandycroft, Limited.

E. W. TARRY & Co., Ltd., Austral Iron Works.

Corner of Anderson and End Streets, Box 1098. 'Phones 149 and 626, Johannesburg. Iron and Brass Founders and General Engineers. Machine Cut Gears in Raw Hide and any Metal a speciality, and in Cast Iron up to 18 feet diameter. Sole Manufacturers and Agents for Tregaskis Patent Drill Heating Furnace.

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Notes and News

We understand from Mr. Herbert Briggs, the tributor of the Louis Moore G.M. Co., Ltd., that he is pushing on the development of that property, and hopes to open up a satisfactory tonnage of good ore in the near future. Mr. Briggs is superintending operations in person. The Eclipse mine in the same district has been taken over by Messrs. Solomon and Craig, and its progress in their hands will be watched with interest.

* * * *

The death took place last week of Mr. Ernest Gordon Sudlow, General Manager of the State Mines, and one of the most popular and respected mine managers on the Rand. Mr. Sudlow was born in Manchester thirty-four years ago, and his early death has cut short a most brilliant and promising career. He came to South Africa in December, 1906, after completing his education at the Royal School of Mines, London, of which he was an Associate, with a most brilliant record. He commenced his mining career on the New Goch mine as a post-graduate student, and, subsequently, after a short stay in Rhodesia, he accepted a position on the Brakpan Mines. After many years on this property in its developing stages, he rose to the position of Underground Manager, and left in 1913, to take up the position of Assistant Manager of the Consolidated Langlaagte Mines. In September, 1915, Mr. Sudlow was transferred to a similar position on the Government Gold Mining Areas, and in January, 1917, he was appointed General Manager. His health began to fail about a year ago. To his widow and relatives the deepest sympathy of the whole mining community goes out. The funeral on Tuesday was attended by a large and representative gathering of mining men.

* * * *

The following is the letter addressed to the London papers by Capt. J. P. Farrar, regarding his resignation from the E.R.P.M. board:

East Rand Proprietary Policy. "Shareholders of East Rand Proprietary Mines, Ltd., should understand that their mine, which has paid to date nearly £8,000,000 in dividends, is not worked out, but that they still possess a vast undeveloped deep-level area, of which upwards of 1,000 claims may be expected to yield profitable results. In 1916 work was started to open up these claims, and up to date approximately £100,000 has been spent on this work. The company still has at its disposal in cash or its equivalent upwards of £500,000 retained from shareholders for the purpose of developing the mine. The necessity for this was foreseen by my brother, Sir George Farrar, killed in 1915. This sum, with careful management, should suffice to sink to the reef. The board, by announcement at a meeting held in Johannesburg, at which about 5 per cent. of the shareholders were represented, and notwithstanding strong representations from London, has now stopped work on this deep-level ground, which is the sheet anchor of the future of the company, and is proceeding to work out the old part of the mine, preparatory to closing down. The company presumably then goes into liquidation, which means the sacrifice of the whole property, with its funds and modern plant, mainly in anticipation of the claims of debenture holders, whose every claim has so far been not only met, but forestalled. The original debenture debt of £1,500,000 now stands at £840,000, but only repayable in instalments extending to 1929. I have now had the opportunity of scrutinising minutely the reports on which this action of the board was presumably based. They do not, in my opinion, justify this abandonment, for which I am unwilling to share the responsibility. I have therefore resigned by cable my seat on the board, and have posted a full statement of my reasons."

Among the chief recommendations of Viscount Haldane's "Coal Conservation Committee," whose final report is reviewed in this issue, is the establishment of a Ministry of Mines and Minerals, presided over by a Minister with a seat in Parliament, to which all the functions vested in various Government Departments before the war with regard to the industry should be transferred. The average output per person employed "above and below ground" in the United Kingdom for the nine years from 1905 to 1913 was only 44 per cent. of the average output for the same period in the United States, and as compared with Germany it was 6.6 per cent. higher; but whereas the output per head in the United Kingdom has on the whole been decreasing the output in Germany has been increasing. "Various reasons," says the report, "may be advanced to explain the decrease, but none can be regarded as adequate. The matter calls for the most complete investigation on the part of employers and the representatives of labour, as the future prosperity of the industry itself and of the industrial position of the country generally depends very largely upon a solution of the problem being found."

* * * *

The Postmaster-General in London announces that mails lost on the "Galway Castle" included letter mails for the Union of South Africa, Bechuanaland Protectorate, Rhodesia, Nyasaland, Portuguese East Africa, Mauritius, the Katanga Province of Belgian Congo, and South-West Africa, containing correspondence posted or received in London between the evenings of August 31 to September 7, and parcel mails for the Union of South Africa, Bechuanaland Protectorate, Rhodesia, and Katanga Province of Belgian Congo (both by Cape route only), South-West Africa, British East Africa, and Zanzibar, containing parcels received in London between midday on August 29 and midday September 5. Letter and parcel mails for the East African Expeditionary Force containing correspondence and parcels of approximately the same dates were also lost.

* * * *

The report of the Shamva Mines for the year 1917 states that development and prospecting operations during the past year have opened up and disclosed a very considerable tonnage of payable ore, with the result that the ore reserves as at December 31, 1916, were not only maintained, but were increased, after deducting the tonnage crushed, by 3,346 tons, and 704,945 tons have, in addition, since been added to the ore reserves up to June 30 last. The development work referred to has been mainly carried out laterally, and mostly on the eastern extension of the upper levels as shown on the plans annexed thereto. At December 31, 1916, the estimated ore reserves stood at 1,605,005 tons of an average estimated value of 5.15 dwts., since, on a recalculation, corrected to 4.64 dwts., to which were added up to the close of the past year 591,152 tons, of an average value of 3.61 dwts., making a total of 2,196,157 tons, of an average value of 4.36 dwts. Deducting therefrom the tonnage crushed during the year, viz., 587,806 tons, of an average block value of 4.19 dwts., the estimated ore reserves at December 31 last are shown to have been 1,608,351 tons of an average value of 4.43 dwts. Adding hereto the 704,945 tons above referred to, which averaged 3.9 dwts. in value, and deducting therefrom the tonnage crushed up to June 30 last, viz., 308,296 tons of an average value of 3.5 dwts., the ore reserves at that date amounted to 2,005,000 tons of an average grade of 4.3 dwts. The mill ran for 339,925 days, crushing 587,806 tons of ore of an average feed value of 3.96 dwts., showing a total net recovery value of £431,543, the profit realised, including sundry revenue, but deducting London expenses, being £164,893. Of this amount £6,000 was placed to reserve, leaving a net profit of £158,893. The increased cost of mining materials and requisites due to the war enhanced the aggregate working costs by 6.59d. per ton at 109.92d., against 103.33d. for 1916. Four quarterly dividends, equal to 26½ per cent., were paid during the year, since when two further quarterly dividends at the rate of 20 per cent. per annum have been paid during the six months to the end of June, 1918.

Owing to the receipt of a dividend on the Rhodesia Consolidated's holding of 65,380 shares in the Falcon Mines, the profit and loss account for the twelve months ended March 31 last compares very favourably with that for the previous period, while revenue in South Africa also increased considerably. The following figures show the position at the two dates:—Revenue in South Africa, 1918 £3,450, 1917 £1,456; dividends and interest, 1918 £10,697, 1917 £1,109; transfer fees, 1918 £170, 1917 £64; total, 1918 £14,317, 1917 £2,629; profit, 1918 £4,667, 1917 £368; shares at cost, 1918 £138,987, 1917 £148,248; market value of quoted shares, 1918 £71,672, 1917 £49,699; loans and sundry debtors, 1918 £20,081, 1917 £17,793; creditors, 1918 £1,025, 1917 £426. The loans and sundry debtors have increased, possibly on account of interest, for as no operations were carried out on the Asp mine during the year no repayment was possible. During the twelve months the company sold 5,668 acres of land at 10s. per acre, giving a profit of 5s. per acre. The land holding now amounts to 453,675 acres, standing in the books at 5s. per acre. The company, it will be remembered, has an interest in the farm Vogelstruisbult, in the Heidelberg district, and apparently is awaiting a favourable opportunity to dispose of the claims, owing to the lack of available funds for developing them.

* * * *

On several occasions in the last twenty years there has been talk of the revival of the Cornish mining industry. In 1907, and again in 1912, capital was raised for the purpose and booms on the stock market were engineered; but the practical result amounted to little, says the *Statist*. And yet the facts of the case justify the belief that a really great revival could be brought about if the inherent difficulties were removed. For years non-Cornish men were looked upon in the country's mining circles as "foreigners," and, as such, ignorant and not reliable; but gradually it has become recognised that without financial as well as technical help from outside nothing can stop the rot which for more than 50 years has resulted in Cornwall's best miners emigrating and becoming the mainstay of mining industries in practically every part of the world. The labour situation, then, is undoubtedly one great drawback in Cornish mining; but the greatest handicap of all to modern development is to be found in the extraordinarily irksome legal arrangements which have to be entered into with property owners before mineral-bearing areas of sufficient size can be obtained to warrant the provision of large sums for working capital. In recent years some of the world's most famous mines have been evolved from discoveries made below ancient workings, and the great advance that has been made in scientific engineering and mining practice in the last 50 years justifies the assumption that, if sufficient capital and skilled enterprise can be attracted, Cornwall may again become a great tin, wolfram, and, possibly, also, copper producer. At present only about twenty mines are being worked, the majority of them small; and it should be borne in mind that, above all, present-day practice in mining, as in other industries, requires the doing of things on a big and comprehensive scale, so as to attain the highest degree of economical operation. This necessitates the ownership of large areas, the provision of solid underground equipment, the development of ore far ahead of mill requirements, and the erection at surface of expensive permanent machinery of the latest design and labour-saving capabilities. In Cornwall, progress on modern lines, far from being widespread, as it ought to be, is confined to two or three mines, and there is no doubt that the basic reason for this is to be found in the exorbitant demands and the general hampering attitude toward industrial development on the part of the landlords, including the Duchy of Cornwall.

In a circular to shareholders, issued this week, in regard to the distribution of shares and options on shares of the Modderfontein East, Ltd., it is stated that share certificates of the Rand Klip, Ltd. (in liquidation), may now be surrendered in exchange for shares, and options on shares, of the Modderfontein East, Ltd. The distribution will be carried out as follows:—(1) Shares: Three Modderfontein East, Ltd., shares of the nominal value of £1 each, fully paid, will be given to shareholders for every eight shares of the Rand Klip, Ltd. (in liquidation). (2) Fractions: No fractions of Modderfontein East, Ltd., shares will be issued, but any fractions of these shares which may arise in connection with this distribution will be paid out in cash on the basis of the proportionate value of such fractions, plus the proportionate value of option rights accruing thereon, taking Modderfontein East, Ltd., shares at 21s. 6d. (being the market price on the 15th October, 1918), and options at 7s. 2d. (being the mean of the market prices on the same date of the two series of options). It will not be possible for shareholders to purchase fractions of Modderfontein East, Ltd., shares from the liquidators in order to bring their holdings up to whole numbers. (1) Options: Every two Modderfontein East, Ltd., shares given in exchange for Rand Klip, Ltd. (in liquidation), shares, as above, carry options to bearer from 2nd July, 1917, on two further shares in the company, viz., an option on one share for three years at 21s. 3d. per share, and an option on one share for four years at 22s. 6d. per share. (2) Fractions: Fractions of options will not be issued, but an option certificate of one or the other series of options will be issued in place of the half-option of both series which may be due in connection with any individual case. The extra option on one share thus issued will be of either the three year or four year series, alternating with the order of the receipt of each application where the need for such issue arises. As an example of the foregoing distribution, a shareholder surrendering 100 shares will be entitled to 37½ Modderfontein East, Ltd., shares, and options to bearer on a corresponding number of shares of that company. He would, therefore, receive 37 Modderfontein East, Ltd., shares, and would be paid in cash 10s. 9d. for the one-half of a share; in addition he would receive certificates for options for three years on 19 Modderfontein East, Ltd., shares at 21s. 3d. per share, and options for four years on 18 Modderfontein East, Ltd., shares at 22s. 6d. per share, or alternately 18 of the three year and 19 of the four year options, this being dependent on the order of receipt of each application referred to above. Further, for the option fraction he would be paid in cash 3s. 7d., being one-half of the mean of the market prices of the two series of options on the 15th October, 1918. In order to obtain the certificates for Modderfontein East, Ltd., shares, and option on shares, to which shareholders are entitled, it will be necessary for them to surrender their share certificates of this company to the Liquidators, Rand Klip, Ltd. (in liquidation), 3rd Floor, National Bank Buildings, P.O. Box 1083, Johannesburg.

* * * *

The *Cape Times* says: Mr. J. B. Taylor, who has returned to South Africa for good, has bought the farm "Geelbek," on the lagoon at Saldanha Bay, the home of the Van Bredas for generations. The farm is over 10,000 acres in extent, most of it excellent pasture land for horses, cattle, and sheep, and including several thousand acres of very good arable land. The shooting is one of the best in the Union, and the lagoon offers very good fishing and fowling. Mr. Taylor intends to make the farm his South African home, and hopes, when the war is over, to have the assistance of his sons in farming the estate. "Geelbek" has an interesting episode in its history. In 1667 Louis XIV.'s Viceroy, Dr. Montdevergne, gave orders for a residency to be established on the farm, and beacons bearing the royal coat of arms were set up. The following year, however, the Dutch Commander of the Cape ordered these beacons to be replaced by others bearing the company's monogram. One of these stands near the homestead of "Geelbek" to-day, and is in a perfect state of preservation.

TOPICS OF THE WEEK.

COMPANY LAW REFORM.

THE Transvaal Company Law is so similar in most respects to that of the United Kingdom that the proposed reform of the latter cannot fail to affect us both directly and indirectly. So much interest was taken in the political part of Lord Wrenbury's Report, which discussed the question of foreign capital in British trade, that the rest of the Report is in danger of being overlooked. Yet the latter recommendations are, in some respects, the more important, for they deal with companies, and consequently with business, of every kind, and Lord Wrenbury is the greatest living authority on company law. After giving an emphatic negative to the question whether *after the war* some restriction should be imposed upon the issue of capital similar to that now exercised by the Treasury, the Committee passes on to suggest changes in the Companies Acts. Rather unexpectedly the first recommendation is that companies shall be allowed to issue shares at a discount. No principle was supposed to be more firmly established than that which forbade such an issue, and the law is clear enough. Unfortunately the principle has been abandoned in practice "by allowing payment of commission in consideration of a person subscribing for shares." Consequently, Lord Wrenbury accepts the evidence "that commercially the issue of shares at a discount is desirable." He stipulates, however, that the amount of discount should be controlled, a maximum percentage being fixed, and that no such issue should be made within five years after the commencement of business. Further, the price should not be lower than 5 per cent. below the market value of the existing shares. On the questions of reduction of capital and payment of dividends out of capital Lord Wrenbury recommends no change in the existing law. One abuse which has grown up of recent years is that of crowding into the memorandum of association words that would cover every conceivable act which the corporation could, under any circumstances, desire to do. According to the Companies Acts, the memorandum has to state "the objects of the company"; the powers of the company are supposed to be taken in the articles of association. As it is, objects are buried and concealed in an accumulated mass of powers. Consequently, the intending investor could often learn nothing except that his money might be used for any conceivable purpose, and the intending creditor does not know what his intending debtor could and could not do in the employment of its capital. Here we have a clear cut and very valuable proposal. The Committee recommends legislation providing that the memorandum "must state the objects, but must not state the powers of the company, that such powers shall be stated in the articles, and that a section should be introduced providing that every company shall have certain powers except in so far as the articles exclude them." Thereby the memorandum would be reduced to its proper function in defining the trade of the company, and the object which it is to pursue with a view to earning profit. Other points are discussed—*e.g.*, the suggestion that the auditors' certificate shall no longer include the qualifying words "as shown by the books of the company"; this the Committee thinks inexpedient, and, indeed, impossible. A private company must include a balance sheet in its annual statement, but not a profit and loss account; here, again, the Committee recommends no change, thinking it unfair to demand a disclosure from a corporation which is not required from a firm. Private companies are very modern things; there is some risk that they may be used for purposes of fraud. However, the Committee has had no evidence of such use, and states that the private company "has up to the present time justified its existence, and should be left undisturbed." Since war taxation began the income tax has become much heavier and more complicated, yet some companies pay fees to their directors "free of income tax and super-tax." As the rate of tax depends upon the individual's total income, this payment is an uncertain amount, and cannot be known to the shareholders; without any qualification, the Committee recommends "that payment to directors free of income tax and of super-tax shall be forbidden."

A NEW FAR EAST RAND MERGER.

Details of the Cassel Clydesdale (Springs) G.M., Ltd.—A Bailey Flotation.

SPECIAL general meeting of shareholders in the Cassel Coal Co., Ltd., has been called for the 18th day of February, 1919, for the purpose of considering, and if deemed fit, of approving, with or without modifications, and authorising the directors to sign and execute with or without modifications and carry into effect the following draft agreement:—

The draft agreement purports to be between a new company to be registered in the Transvaal and named Cassel Clydesdale (Springs) Gold Mines, Ltd., or by some other suitable name, as purchaser, of the first part, this company and the Clydesdale (Transvaal) Collieries, Ltd., as vendors to the new company, of the second part, and Sir Abe Bailey, K.C.M.G., M.L.A., acting for himself and co-principals, as guarantors, of the third part.

THE VENDORS' SHARE.

By this agreement the vendors sell and the new company purchases two portions of the farm Daggafontein No. 25, in the district of Boksburg, for the price of 200,000 fully paid-up £1 shares in the new company, such price to be shared equally between the vendors. Each of the vendors will subscribe for at par 50,000 shares of £1 each in the first capital of the new company, payable 2s. per share on application, the new company not to be entitled to call up more than 4s. per share (including the initial 2s. per share subscribed) per annum, during a period of two years from the registration of the company. The board of the new company will create a further 150,000 new shares of £1 each and will offer one-half for subscription by shareholders of the Cassel Company and of the Clydesdale Company respectively at par, payable in full on application. The board of the new company will further create within a period of twelve months after expiry of the period of the above offer of shares a further 150,000 shares of £1 each, and each of the subscribers to the first issue of 150,000 shares shall have the option to subscribe at par for an equivalent number of shares in the second issue. The board of the new company may

issue bearer certificates in respect of the above-mentioned option. The guarantors guarantee the subscriptions of both of the above-mentioned issues of 150,000 shares.

GUARANTORS' OPTIONS.

In consideration thereof the guarantors receive an option to subscribe for further new shares in the company not exceeding 500,000 in number at par during a period of five years from the registration of the company, and a further option to subscribe for shares in the company, not exceeding 500,000 in number at the price of 22s. 6d. per share, during a period of seven years from the registration of the company. The guarantors will assign to the Cassel Company and the Clydesdale Company each a 5 per cent. participation in the above options, over two issues of 500,000 shares each. The Cassel Company and the Clydesdale Company will nominate three directors on a board of six on the first board of the new company, the chairman whereof shall have no casting vote until the capital thereof has been increased beyond £300,000, after such increase the Cassel Company and the Clydesdale Company shall each be entitled to nominate two directors on the board. The new company will not increase its capital beyond £300,000 and the guarantees and options would only become operative if the new company shall successfully carry out negotiations for obtaining under mining lease from the Government a sufficient area of adjacent ground to constitute with the properties sold by the vendors, a workable mining proposition. Should the capital of the new company not have been increased to £1,600,000 within three years from registration of the company or options not have been granted within that period which when exercised would bring the capital up to that sum, or if the property sold by the vendors shall not at that time have been otherwise dealt with, either the Cassel Company or the Clydesdale Company may call upon the new company to go into liquidation, in which event each of those companies shall receive back as far as possible, the property sold by it to the new company.

THE KNIGHTS DEEP: CONSULTING ENGINEER'S REPORT.

In his report on the Knights Deep, Ltd., for the year ended 31st July, 1918, Mr. C. D. Leslie, the consulting engineer, writes:—Compared with the figures for the preceding year, the tonnage milled was decreased by 55,800 tons, the declared revenue being 0.530d. per ton less, while working costs show an increase of 1s. 1.745d. per ton. The declared working profit, excluding 781 ozs. of gold valued at £3,254 3s. 4d. placed in reserve, was £21,019 0s. 1d., equal to 4.422d. per ton, as compared with £93,214 1s., equal to 1s. 6.697d. per ton for the previous year. An increase of 369 in the average number of natives employed was unfortunately more than counterbalanced by lower efficiency due to the shorter hours of work which prevailed as from 1st January, 1918. Higher profits during the latter part of the year were the result of an improvement in average grade which it was found possible to effect. The ore reserve fully developed at 31st July, 1918, is estimated at 1,671,000 mine tons of an average value of 4.43 dwts., in addition to which the partially developed ore is estimated at 83,000 mine tons of an indicated value of 5.03 dwts. Certain large blocks of ground included in the last estimate have been eliminated from this reserve, as recent information indicates that they cannot be profitably worked under present conditions. On account of eaving ground other blocks of ore have had to be excluded from the reserve, but it is hoped that by sand-filling some of this tonnage will be recovered. In addition, there is a large tonnage of reclamation ore in the foot and hanging walls of stoped areas and in pillars left as supports.

but on account of uncertainty regarding the extent of this tonnage and its value, this ore has been excluded from this estimate, although, no doubt, much of it will prove to be payable. Hitherto the south-east corner of the Connor shaft section has been worked through winzes from the 19th level. A large tonnage remains in this corner and to deal with it expeditiously a small incline shaft is being advanced and equipped. The manager and his staff have been faced with very trying circumstances during the year under review, and their efforts to continue profitable working are very keenly appreciated by the superintending engineer and myself. These efforts are encouraged by the expectation of better profits if the mine can survive the disabilities imposed as a result of the war.

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WRIGHT'S ROPES

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MORE ABOUT THE GOLD QUESTION.

Results of the American Gold Conference—Some London Views.

AN American gold conference, composed of the producing interests, took place recently at Reno, and lasted three days, was attended by 96 representative producers with interests covering a majority of the important gold mines of America, and adopted a resolution urging "relief by the United States to the gold producers of this country to correspond with the increased cost of production, the extent of such relief to be fixed from time to time to meet changing conditions." It is urged that some of the larger mines are at present operating at an actual loss, but are endeavouring to continue in the hope of obtaining, finally, needed relief; and the *Commercial and Financial Chronicle* understands that "from first to last the conference confirmed proposals of sound money and rejected all propositions to alter the unit of weight of gold in a dollar or to change the official 'price' of gold." The resolution adopted recalled that gold production in the United States has declined from \$101,000,000 in 1915 to \$84,000,000 in 1917, with a still greater decrease now taking place, and stated that the falling off is principally due to the increased cost and shortage of labour and material. The price of gold, as the country's standard of value, is fixed by law at \$20.6718 per ounce, and is the only important product which has not obtained an increased market price due to present war conditions. It was added that capital cannot now be obtained for gold mining, but is being withdrawn whenever possible; that on account of the increased cost of production, with no increase in the market price of their product, many mines have been forced to cease operations in the last six months, and many others are now mining at a loss and are about to be closed down or abandoned and will require years to re-open, so that a large proportion of the industry is now threatened with extinction; that an emergency exists, in which Government calls for the maintenance and, if possible, the increase of production as of next importance after food and war munitions, being of vital importance as a basis for the continually expanding credits which are necessary both for the financing of the war and for reconstruction afterwards; and that the gold resources of the United States are adequate to maintain former production. In these circumstances it was resolved that of all the measures suggested, the most effective means of maintaining and encouraging the production of gold in the United States was by Government relief to the producers on the lines indicated above. Nothing in the resolution is construed as meaning an intention to alter the amount of gold in the dollar, nor to place a premium upon gold. The United States War Industries Board has resolved that gold mining is an essential war industry and will be given preferential treatment in the supply, not only of tools, machinery and equipment, but in the transportation service, fuel and labour supply.

A LONDON VIEW OF THE QUESTION.

Mr. F. Faithfull Begg writes to the *Financial Times* as follows:—"The references to the *South African Mining Journal* in your issue of the 5th and the particulars given of the discussions which have taken place in South Africa with regard to the gold question are very interesting. It is, however, more interesting still to observe that these discussions leave entirely out of account what is the most important question involved. Mr. Alexander Aiken, in his paper on currency from which you quote, deals with the matter wholly from the point of view of the price paid to the gold producer for his product, having regard merely to the question of whether or not the currency in this country has become depreciated, and consequently payment in that medium at the rate of £3 17s. 10½d. per ounce is inequitable. Mr. Aiken very properly points out that authorities differ on the question and that in existing circumstances, owing to restrictions upon all dealings in gold, a proper market price of that metal as compared with the mint price of £3 17s.

10½d. cannot be definitely ascertained. This, however, is the purely mining point of view—important, no doubt, in itself—but the incidence of the question lies much deeper and is of the greatest importance to the whole commercial community of the Empire; indeed, it is of world-wide importance. Hence it was that the London Chamber of Commerce recently invited Sir Lionel Phillips to address them on the existing situation, so as to elicit commercial opinion as distinguished from the view of those engaged on the production of gold.

A POSSIBLE GOLD FAMINE.

"The danger to be guarded against and with which we are already face to face is a famine of gold. Already, owing to the vast extension of paper currencies in Europe and elsewhere and the extension of credit facilities, the basis in visible gold upon which this vast superstructure of credit throughout the world, or at least the western world, rests is inadequate. I do not think it is necessary to quote figures to prove this statement. A gold famine must have as its chief effect a rapid fall in all values, prices of commodities and the like. The inevitable result of this must be strikes and economic disturbances of all kinds, leading to no one knows where. However desirable it may be to return as soon as possible to conditions more or less normal, it is of the highest importance that the process should be gradual so as to permit of readjustment without dislocation. For this purpose we shall require the largest possible supply of visible gold as basis for credit."

PRODUCTION TO BE ENCOURAGED.

He adds:—"Hence it becomes of the highest importance to encourage in every possible way the production of gold. The means are not of so much importance as the attainment of the end in view. This was fully recognised in this country at the beginning of last century, when it was necessary as the result of the Napoleonic wars to deal with a problem of a similar character. Financial science was not at that time so fully developed or so well understood as it is now. Yet the financiers of those days took a sound view, and in order to meet the situation the Bank of England steadfastly maintained a policy of bidding for gold in advance of the mint or coinage price so as to accumulate 'treasure,' as the writers of the period described it, and so prepare a safe basis for the resumption of specie payments.

A QUESTION FOR THE GOVERNMENT.

"I do not suggest that the resultant loss should now, as was the case then, be borne by the Bank of England. The conditions are different and the problem much larger and much more a national one. The question to-day is one for the Government to deal with. As far back as last April the London Chamber of Commerce, at the instance of the financial section of the Chamber, made representations to the Chancellor of the Exchequer on this point. But nothing came of them. The exigency now is much greater. The situation has developed and become much more serious. Not only should measures, no matter what the cost may be, be taken to preserve the present output of gold (at the present time a rapidly diminishing quantity), but encouragement should be given to the development of new gold mining areas. Gold mines cannot be developed in a day. It takes years to bring a new gold mining proposition of any importance to the productive stage. A close study of the question leads to the conclusion that, as a means of averting catastrophe by a too rapid fall in prices after the war, a result which must follow if a gold scarcity prevails, every reasonable amount of encouragement to gold mining should now be made a national object. Money could not be better spent."

UNJUSTIFIABLE STRIKES: THEIR CAUSES AND CONSEQUENCES

A STRONG protest is made against unauthorised strikes in the quarterly report just issued by the General Federation of Trade Unions of Great Britain. The dispute record for the past quarter was one of the lowest in the history of the Federation, as only 39 claims for Federation benefit have been received involving only 1,789 individuals, and the societies affiliated to the Federation have evidently been doing their best to carry out the recommendations of the Management Committee in respect of strikes in war-time. Unfortunately—the report proceeds—the experiences of the Federation have not been the experiences of all other trade union organisations; disputes and rumours of disputes have been far too common. Sometimes the circumstances afforded justification for the extreme action of the work-people, but in other cases the misunderstandings have been magnified into grievances, and stoppages have taken place when amicable settlements were easy, had the ordinary trade union machinery been properly used. Every sensible man and woman agrees that strikes which follow upon misunderstanding or pique cannot be defended. The consequences of such strikes are always deplorable, and sometimes they are very dangerous. Such strikes confuse the Army, comfort the enemy, alienate public opinion, and build up a general hostility which will react seriously when the war ends and ordinary economic conditions again operate. Much of the trouble arises from the action of irresponsibles and persons who act outside, and in opposition to, the regularly elected Trade Union Executives. It is always difficult, and mostly unwise, to attempt any determination of other men's motives. One can only interpret utterances

and actions, and, looking over these, it seems clear that some who have promoted unauthorised and irregular strikes have openly desired to force peace by making it impossible for Britain to continue supplies to her troops and her Allies. A few have sought political notoriety and advancement; others have openly taken advantage of the labour shortage to demand wages which are beyond the economic value of the labour expended; many have believed that the only way to meet rising prices was to force up wages without waiting for the expiration of agreements or contracts entered into by officials of the Union. Those who have so acted, no matter what their motives may be, have inflicted serious damage upon the real trade union movement. Whatever the trade union movement is, or possesses, is due to organisation, and not to anarchy. To ignore and discredit officials who have been properly and democratically elected is to court catastrophe. It is playing the game of the reactionary employer, as well as the game of the revolutionary politician. Some day the war will end. Some day ordinary economic laws will operate again, and the Union with discredited officials and damaged credit will have a very unhappy time. The older and experienced Trade Unionists know this, but many thousands of them are in France, and for the time are voiceless and voteless, while hundreds of thousands of newcomers, many of them Trade Unionists by compulsion and for the first time, are like amateurs with a powerful and unfamiliar weapon. Many of these are not Trade Unionists in spirit, and will quit the movement the moment circumstances change; in the meantime they are creating dangerous precedents and hostilities. Their careless disregard of common-sense and economic law is reducing national credit, inflating the currency, and increasing the price of every commodity the workers themselves use.

COAL CONSERVATION COMMITTEE'S REPORT.

Important Recommendations on the Mining, Carbonisation, and Saving of Coal.

THE Ministry of Reconstruction issued on August 21 the final report of the Coal Conservation Committee which was appointed to consider and advise as to the improvements which can be effected (1) in the mining of coal; (2) in the using of coal; and (3) as to the extension of coal supplies. Five sub-section committees were appointed to deal with different phases of these questions, namely, with mining method, power generation and transmission, metallurgy, carbonisation and geology. At a later date the sub-committees on carbonisation and metallurgy were amalgamated. The reports of these various sub-committees have been approved and adopted by the main committee, and they are now published along with the final report in the form of appendices. The report of the Power Generation and Transmission Committee was published separately early this year, and its recommendation of a national scheme of electrical generation and transmission has attracted wide attention. This report is reproduced in the final report which forms a comprehensive survey of the place of coal in the industries of the future. Considerable attention has been given to the part which the carbonisation of coal is calculated to play in reconstruction and all known methods of preparation and treatment have received full examination. Steps are suggested not only for making more efficient use of these grades of coal at present burned in a raw state, but also for putting to valuable use inferior coal, shale and coal dust, now regarded as waste. Another matter of which the committee emphasise the importance is the necessity of obtaining fuel

oils, motor spirit and the raw materials for explosives, drugs and dyes. It is considered practically certain that larger supplies can be obtained from coal by the new methods of working which are proposed. The committee recommend the combined working in groups or units of coke ovens, blast furnaces, steel furnaces and rolling mills, each unit to have a capacity of from 300,000 to 500,000 tons of finished steel per annum. One of the conditions of success will be the grouping of these united plants in suitable districts. A definite conclusion has been reached regarding the production of electric power on a large scale, and it is felt that there is also a definite field for the use of gas engines of the ordinary type. Research work is in progress with a view to forwarding the design and production of internal combustion engines. The necessity of replacing old with modern plant, especially in the smaller colliery undertakings, is pointed out as a further means of economising in fuel. The establishment of a Ministry of Mines and Minerals is recommended. It is proposed that, with certain exceptions, those functions connected with the coal mining industry now vested in various Government departments, shall either at once or after the war be transferred to a Ministry presided over by a Minister with a seat in Parliament. It appears that no fewer than seven Government departments are now intimately concerned with mines and minerals. It is pointed out that considerable possibilities in connection with the location of new coalfields and the extension of those already being worked lie within the scope of the geological survey now being made. It is possible, the report shows, that a large increase in our mineral wealth might be found were systematic exploration carried out by this body.

ASSAY SUPPLIES AND THE UTILISATION OF SOUTH AFRICAN MATERIALS IN ASSAY OFFICES.—I.

To the discussion on the above subject before the Chemical, Metallurgical and Mining Society of South Africa, Mr. T. Graham Martyn contributed the following:—I wish to relate in this contribution my experiences and conclusions on the subject under discussion. Cupels: I only ventured recently to try cement bottoms for cupels, as I was told a good while ago that they were not altogether a success, and did not care to disturb the office routine by trying something not too well reported on by others, besides being rather dubious as to their capacity for absorbing a normal amount of lead. A few months since, however, our consulting metallurgist requested that a trial be made, and I may say at once I think the result is quite satisfactory. It did not call for any serious change in the method of manufacture, as we have for some years past been giving the mould a second filling as otherwise our cupels were too shallow. The machine used is Braun's table pattern with automatic feed hopper, and in order to make the compound cupel the hopper is filled with suitably moistened cement and a tin of moistened cupellite is placed on the left of the operator, who rotates the disc sufficiently to bring a mould full of cement under the plunger, presses it moderately, raises the plunger, fills the top of the mould with cupellite, and after pressing as hard as possible ejects the cupel as usual. It will be noted that we get the smooth pressed surface between the cement and the cupellite which Mr. Watson seems to have found a source of trouble, but the cupels are quite satisfactory and the economy achieved is very considerable. These cupels are cylindrical, and the cupellite is pressed straight down on the partially pressed cement; it is quite possible that when making cupels of the partially conical form in two stages of pressure there would

be inequalities in the distribution of the pressure that would lead to unequal shrinkage in drying and to flaking around the edges as described by Mr. Watson. Crucibles: My experience with local crucibles has not been such as to justify me in supporting the statement that they are better than the ones formerly imported from England and Germany; in fact I think the "Three Star" crucibles were the most resistant to temperature, change and gold assay slag erosion that I ever tested and were very closely run by the Battersea pots. If our local manufacturers could only manage to imitate them more closely in the physical texture of the mixture employed they would achieve even better results than they have up to the present. Until recently at any rate, local makes have shown a tendency to sudden changes in quality, which have at times been very annoying; but I have found the greatest uniformity and obtained the most satisfactory results from a brand, which, whilst made I judge from a clay of inferior quality to that employed by other makers and so weak physically that the pots will scarcely stand carriage, and the boys at first can scarcely get them in and out of the furnace without breaking the edges, yet, owing to the coarser texture and more even mixing and moulding, last longer on the average than the more finely ground and stronger pots. Pots of a fine-grained and very hard-burnt type I have found the most disappointing of all, frequently eating away at the bottom in deep gashes and becoming too threatening for further use after only two or three fusions. We get an average of from twelve to fourteen fusions from No. 2 pots, but by trying a pot over and over again until it failed I have obtained as many as thirty-six fusions from a "Three Star" and nearly as many from local makes. Possibly one could



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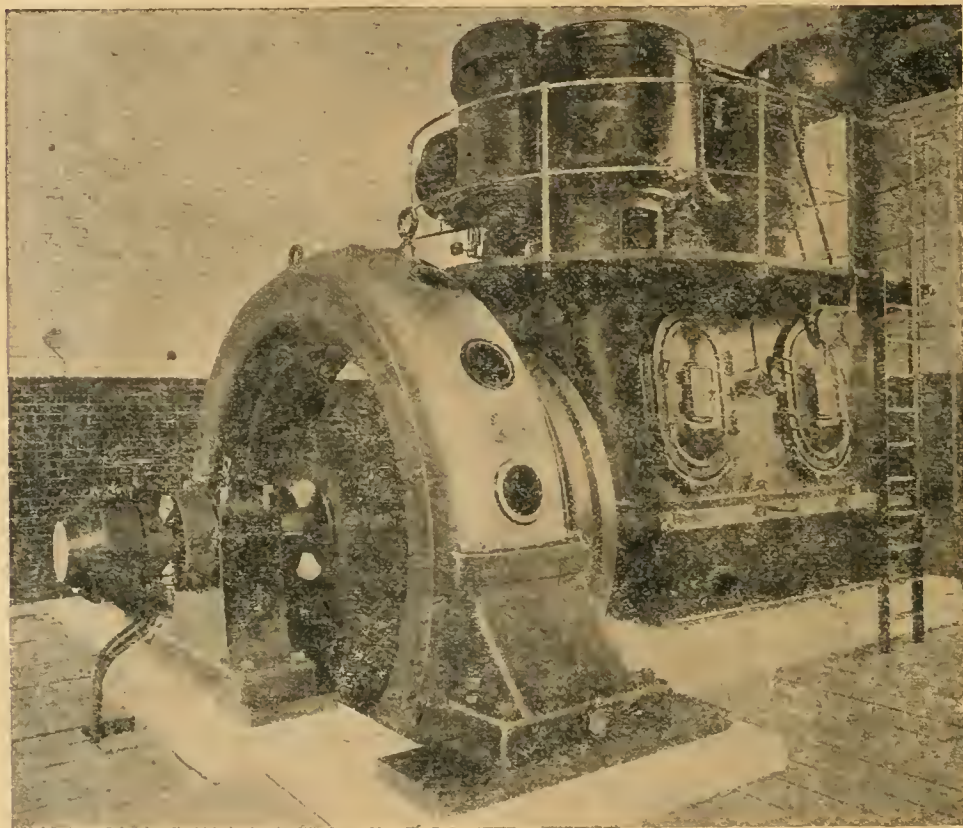
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get an average of eighteen or more fusions per pot if a pot were never rejected until it absolutely failed, but one prefers naturally to reject a pot that looks pretty bad rather than run the risk of numerous repeat assays. Seven years ago, when pots were almost all imported from overseas, questions of economy did not loom so large in our minds, and we were less inclined to take risks for the sake of saving a little in costs, hence when a pot had done service for four or five times and began to show a little corrosion it was pensioned off to help make borders for the beds of somebody's garden, but when local pots were offered and destructive trials invited, we discovered that pots which after three or four fusions looked about finished were good for another ten or a dozen trips. At about the same time some of us drew attention to the destructive effect on pots of slags rich in borax, and the latter has probably of recent years been used much more sparingly with corresponding advantage to the average life of crucibles. Again, the pots get much less severe testing in the reverberatory furnaces now so generally employed than they used to get when bedded in the fuel of the old Cornish furnaces. I doubt if local pots would stand an average of half-a-dozen fusions in a coke-fired Cornish furnace. I have written somewhat at length on this subject lest the local manufacturers should not be tempted by the testimony already printed in our *Journal* to rest on their oars and relinquish their efforts to produce with certainty and regularity a pot really equal to the "Three Star" and "Battersea" pots; otherwise should the latter ever have a chance of competing in price they will certainly regain a considerable footing in the district. Borax substitute: The substitution of fluorspar for borax in assay practice has also proved to be both a technical and an economic success; and as I do not know who originally suggested it, I can without bias express the opinion that he, as well as the originator of cement bottoms for cupels, ought to be granted a substantial reward by the mining houses. When asked to

make a trial of "fluxite," having been assured that others were using it successfully, I decided as a first experiment to replace the whole of the borax by the same weight of fluxite, and found the resulting slag as fluid as usual and, if anything, easier to separate from the lead button. After a few days, however, I noticed that crucibles were being used up at a great rate, but for the moment forgot the change of flux and blamed the manufacturers of the crucibles for one of the all too frequent fluctuations in quality. An inspection of some of the rejected pots, however, showed that they were very uniformly corroded, and it then dawned on me that I had not given sufficient consideration to the possible effect of the fluxite in modifying the acidity of the charge. The removal of the borax would certainly leave the flux more basic, and the question arose would the fluorspar be neutral or would its use also tend in the same direction? Text books have told us that fluorspar improves the fluidity of charges simply by admixture owing to its own greater fusibility, but I long since discarded that explanation as experiments with fluorspar alone showed that it was by no means easily fusible, and it is much more likely that it combines to form fluo-silicates of greater fusibility than fluorspar itself. Now, a fluo-silicate contains a metallic fluoride such as fluorspar (CaF_2) itself, combined with silicon tetra-fluoride (SiF_4). In the production of the latter silica (SiO_2) must be used up, thereby increasing the basic char-

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acter of the charge and the liberated oxygen replacing the fluorine will produce calcium oxide (CaO) and thus act further in the same direction. The kind of action which I believe takes place may be represented thus:—The equation $2\text{CaF}_2 + \text{SiO}_2 = \text{SiF}_4 + 2\text{CaO}$ sets forth the simple exchange between fluorspar and silica for the sake of clearness, but to each side must be added $\text{CaF}_2 + 2\text{SiO}_2$, giving the result $3\text{CaF}_2 + 3\text{SiO}_2 = \text{CaSiF}_6 + 2\text{CaSiO}_3$. Here then we have the probable explanation of the corrosion of crucibles and liners, we have removed the acidic flux borax and replaced it by the basic flux fluorspar. This also explains the boiling over complained of, as some of the carbonate of soda, instead of being decomposed gradually by contact with the free silica in the charge during the progress of the fusion (before actual fusion and whilst the charge is still somewhat open and porous as is normally the case) some of the carbonate of soda I repeat remains when the charge reactions are completed and reacting with the silica of the crucible itself corrodes it badly and keeps up the evolution of carbon dioxide with consequent boiling over of the charge. The remedy in the case of our assay charges, where the gangue is mainly silica, is obviously to reduce the amount of flux

employed. This I did by about 10 per cent. with immediate and complete success, thereby saving in the soda carbonate and litharge more than the cost of the fluxite employed and, of course, saving in addition the whole cost of the borax formerly used. To intrude for a moment on the domain of the cyanider, I have been told that the attempt to use fluorspar in the smelting of gold zinc slime has not been a practical success mainly owing to rapid corrosion of the liners. This case is a little different, as the gangue is rather on the basic side and in some cases at any rate calls for the addition of silica. My suggestion for a further trial is as follows:—Take any borax mixture which is normally successful for the particular sample of gold zinc slime and omitting all the fused borax, replace each unit of the same by 0.3 units of silica (sand residue) or, say, one-third. Try in successive experiments varying proportions of fluorspar or fluxite, but always using in addition for each unit of fluorspar a further 0.77 units of silica or, say, three-quarters. If the corrosion of the liner is not overcome by the foregoing formula a larger proportion of sand should be tried.

(To be continued.)

The annual report of the Rezende Mines to 31st December, 1917, states that a profit was made of

Rezende Mines. £15,119 0s. 5d., and after deducting

London expenses, £2,580 19s. 7d., depreciation £3,068 6s. 10d., and income tax £2,870 15s., and crediting transfer fees, interest and royalties, the profit and loss account shows a credit balance of £8,351 17s. 9d., carried to the appropriation account, which at the 31st December, 1917, showed a credit balance of £45,545 0s. 5d., to be carried to the balance sheet. Considering all the circumstances, and having in view the heavy outlay before the company, in developing the eastern section, the board considered it inadvisable to make any distribution in the form of dividend. The sum of £3,068 6s. 10d., which has been written off machinery and plant and buildings is at the rate of 5 per cent. off last year's balances and 2½ per cent. off additions during the year. The ore reserves are estimated at 408,257 tons as compared with 350,807 tons last year. In his report on the operations of the company, Mr. S. R. Jameson, the consulting engineer, writes:—The development policy has aimed at exposing as much as possible of the eastern ore bodies. This is reflected in the ore reserves of the central and eastern sections, which total 135,941 tons, valued at 11.77, as compared with 78,491 tons, valued at 6.6 dwts. twelve months ago, an increase in gold contents of nearly 300 per cent. The following development was accomplished on the eastern ore bodies, to the end of the year: Level, 350; length of shoot, 781 ft.; width, 60 in.; value, 24.4 dwts.; reduced value, 15.3 dwts. Level, 4th; length of shoot, 566 ft.; width, 50 in.; value,

21.5 dwts.; reduced value, 13.8 dwts. Level, Streatham; length of shoot, 114 ft.; width, 39 in.; value, 22.4 dwts.; reduced value, 16.8 dwts. Of the above development the 350 ft. level east face and the Streatham west face were both stopped, owing to prevalence of oxidized ground under the river bed, but payable values still continue. The linear distance between these headings amounts to 900 ft., and during the year the proving of this area will be proceeded with. The increased cost of all mining supplies is responsible for the rise in operating expenses. As a result of war conditions it is estimated that the cost of winning gold from this mine has increased by 4s. 10d. per ton. The development of the eastern ore bodies continues to open up ore of high grade, alternating with bodies of low value, and must be considered very satisfactory. The area is being attacked from the 4th and 5th levels; in addition, the 6th and 11th levels are being projected from the old central section. A circular shaft is being sunk in a suitable position on the new shoot, and will be continued down to No. 11 level. The prospects for the ensuing year, notwithstanding the heavy rise in costs due to the war, should result in increased profits due to the higher grade of ore reserves now being developed. In conclusion, I can only say that the outlook for the mine is as bright as ever it was, and that a promising future lies ahead.

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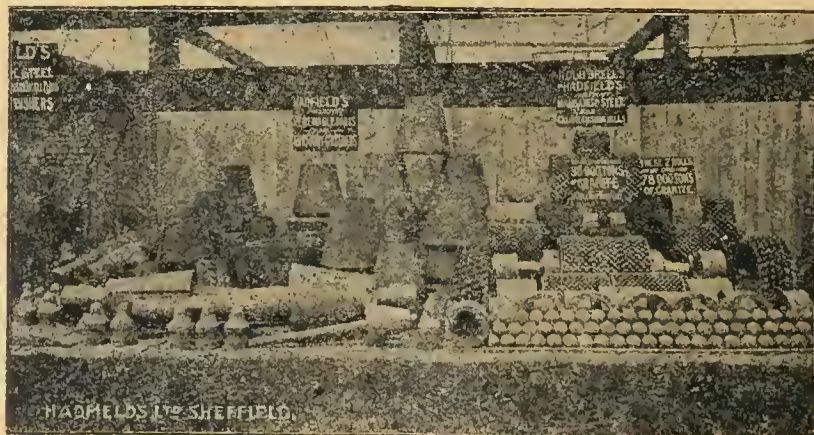
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THE WEEK IN THE SHAREMARKET.

Restricted Business—Falling Prices—Partial Rally.

BEFORE business commenced on Saturday morning one of the brokers offered to lay a bet that, in view of the satisfactory war news, the market would again go lower. He found no takers. This caution was fully justified by the record of the call—ten sales. Glynn's Lydenburg better, Van Ryn Deep unchanged, and all the rest, excepting penny stocks, lower. There was a good deal more business put through after the call, but without any improvement in prices. Monday morning showed no change either in prices or volume of business. If a few shares are wanted, possibly 3d. more may have to be paid for them than the last quotation, while if it is a question of selling the reverse process is gone through. The whole Modder group passed without any business being transacted. Prices went still lower during the course of the day, with the exception of Alkalis, which made 56s. The market closed weak. The call on Tuesday was a monotonous record of further falling prices, without a single redeeming feature. During the course of the day and at the close it was just a repetition of Monday's performance. It looks from Wednesday's call as if one might well simplify this report by starting with "Bad to worse," and then write "ditto" each following day. Only a dozen stocks were dealt in and half of them were low-priced goods. The better class shares were again lowered. There was a prolonged howl during the afternoon from one broker, offering to buy 1,000 Springs at 68s. 3d., an advance of a ticky on the morning's price. The market closed a shade firmer. At the opening on Thursday there was an improved demand for West Springs and Modder Easts. This was followed on call by a partial rally, notably in Geduld Proprietary, Government Areas, Modder Easts, Randfonteins, Rand Selections, Rooibergs, Sub Nigels and their options, Springs, West Springs and their options. It is somewhat early for making a forecast, but it looks as if the worst was over from a market point of view. The opinion also seems to be that the mining interests will not be so seriously affected by the prevailing epidemic as was feared at first. In a dull market like that of last week anything in the shape of activity could not be expected in outside stocks. The record is meagre. Sales: Monteleos, 25s. and 24s. 6d.; Phoenix, 11d. and 1s.; Sakalavas, 9s. odd lots; Makanyene Diamonds, 37s. 6d. Buyers of Union Tins, 5s.; Mauss Syndicate, 40s., with seller at 50s.

The alterations in prices on Friday were:—Sales: Consolidated Langlaagte, 20s.; Geduld Props, 38s. 9d.; Knight Centrals, 4s. 9d.; Leeuwpoots, 29s.; New State Areas, 19s. 9d.; West Springs, 24s. Buyers and sellers: City Deeps, 53s. and 53s. 9d.; Lydenburg Farms, 8s. 8d. and 8s. 10d.; Modder East three-year options, 6s. 3d. and 6s. 4d.; Springs, 68s. 6d. and 68s. 9d.; Wit. Deeps, 10s. and 10s. 3d.; West Springs Options, 10s. 6d. and 11s. So far as can be ascertained at present, the mines most seriously affected by the epidemic are Glynn's Lydenburg, Leeuwpoot and Zaaiplaats, all of which are shut down.

E.R. Props.	4 3	4 3*	4 3*	4 0*	4 3*	4 3*
E.R. Debs.	—	—	£65†	£65†	£65†	—
Eastern Golds. . . .	1 1*	1 1*	1 1*	1 1*	1 0*	1 1*
Ferreira Deeps. . . .	—	8 6*	—	10 0*	—	10 6*
Frank Smith Dias. . .	3 5*	3 6*	—	—	3 4*	3 6*
Geduld Props.	39 6	39 6	38 9	38 6	38 0	39 0
Glencairns.	—	—	2 0†	—	2 0†	2 0†
Glencoe Colls.	—	—	—	—	—	6 0*
Glynn's Lydenburgs. .	24 3*	25 0*	25 0*	25 0	24 0*	24 6†
Govt. Areas.	90 6A	90 3	90 6	90 3	89 0	89 6
Jupiters.	4 3*	4 0*	4 0*	4 0*	4 3	4 0*
Klerksdorp Props. . .	—	3 0*	3 0	—	3 0	—
Knight Centrals. . . .	4 6	4 6*	4 8	4 7*	4 6*	4 8
Knights Deeps.	5 0*	—	5 0*	—	—	—
Lace Props.	12 2*	12 0	11 6*	11 9	11 6*	—
Leeuwpoot Tins. . . .	31 0	30 0*	30 0	29 0*	28 6*	28 6
Lydenburg Farms. . .	9 0*	9 0	8 8*	8 6*	8 6	8 6*
M.R. West Debs. . . .	—	—	£60*	—	—	—
Modder B.'s.	165 0	164 0*	163 6*	161 0*	164 0*	161 0*
Modder Deeps.	147 0*	147 0*	147 6*	147 6*	145 0	145 0*
Modder Easts.	21 3*	21 0	20 9*	20 3	20 1½	20 6
Do. Options (3yrs.) . .	6 6*	6 6*	—	6 7†	6 3*	6 0*
Do. Options (4yrs.) . .	7 6*	7 9†	—	—	—	7 5†
Hume Pipes.	33 0*	33 0*	—	32 6*	32 6*	32 6*
Natal Naviga. Colls. .	—	19 0*	19 0*	19 0*	19 0*	19 0*
National Banks. . . .	—	£14½†	—	£14½*	£14½*	£14½†
New Boksburgs. . . .	1 1*	1 1†	0 10†	0 10†	—	—
New Eland Dias. . . .	—	—	23 0*	—	—	23 0*
New Era Cons.	10 3*	10 4*	10 3*	10 3*	10 3*	10 3*
New Geduld Deeps. . .	5 6*	5 6*	5 8*	5 7*	5 7*	5 6*
New Heriots.	—	12 6*	13 0*	13 0*	13 0*	13 3*
New Kleinfonteins. .	13 6*	13 0*	13 3	12 9*	12 6*	13 9*
New Modders.	£27*	—	—	—	£26½*	—
Nigels.	—	—	4 0*	—	4 6*	4 6*
Nourse Mines.	18 6†	17 6*	17 6*	—	—	—
New States.	20 3	20 0	20 3†	19 6	19 0	19 6*
Pretoria Cements. . .	72 6†	70 0*	70 0*	70 0*	70 0*	70 0*
Princess Estates. . . .	3 3*	3 3*	3 4*	3 5	3 2*	3 0*
Rand Colls.	—	2 6*	2 6*	2 6*	—	—
Rand Klips.	10 0*	—	10 0*	10 3†	9 9*	—
Rand Nucleus.	1 3*	1 3*	1 4*	1 4*	1 3*	1 4*
Rand Select Corp. . . .	85 6*	85 6*	85 6*	85 0	83 6*	85 0*
Randfontein Deeps. . .	5 6*	—	5 6	4 6*	—	4 6*
Randfontein Est. . . .	15 0†	15 0†	15 0†	14 6	14 0*	15 0*
Rooibergs.	9 11†	9 6*	10 0	9 3*	9 0*	10 0*
Rooipoort Uniteds. . .	3 0*	3 0*	3 6*	3 0*	3 0*	3 0*
Ryan Nigels.	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Shebas.	1 0†	1 0†	1 0†	1 0†	—	0 11
S. Van Ryns.	—	—	12 6*	12 6*	12 6	12 3
S.A. Alkali.	57 6*	55 0*	50 0*	50 0*	55 0A	52 6*
S.A. Breweries.	35 0†	35 0†	—	—	—	—
S.A. Lands.	6 7*	6 7	6 5*	6 6†	6 0*	6 5*
Springs Mines.	70 9	70 3*	70 6A	69 9	68 0	69 0
Sub Nigels.	27 6	27 6*	27 6*	26 6*	26 9*	27 0
Swaziland Tins. . . .	31 6†	31 6†	31 6*	31 6†	—	—
Trans. G.M. Est. . . .	13 0*	13 0*	—	16 0†	16 0†	16 0†
Van Ryn Deeps.	70 0*	70 6	70 0*	70 0*	69 0*	69 0
Village Deeps.	18 0†	18 0†	18 0†	18 0†	18 0†	15 6*
West Springs.	24 6	24 0*	23 9	23 6	22 0	23 9
Western Rand Est. . .	—	—	2 3*	2 3*	—	—
Witbank Colls.	—	—	50 0*	50 0*	—	—
Wit. Deeps.	10 0*	9 9*	10 0	9 9*	—	9 9*
Wolhuters.	4 0†	—	4 0†	4 0†	4 0†	3 6
Zaaiplaats Tins. . . .	16 8*	16 6*	16 3*	16 1*	15 9*	16 3
Union 5 p.c.	£105½	£105*	£104½*	£105½*	£104½*	£105*

*Buyers. †Sellers. AOdd lots. BEx London.

	Fri. 18th.	Sat. 19th.	Mon. 21st.	Tues. 22nd.	Wed. 23rd.	Thurs. 24th.
African Farms	17 3	16 10*	17 0†	15 9*	15 9*	15 11
Apex Mines	7 6	7 7*	7 6*	7 6*	7 6*	7 6*
Bantjes Cons.	3 3*	3 3*	3 5	3 5†	3 0*	3 2*
Brakpan Mines	—	71 0*	71 0*	72 6*	71 6*	71 6*
Breyten Colls.	10 0*	10 0*	—	10 0*	—	10 0*
British South Africa	18 6†	18 6†	—	19 0†	—	—
Bushveld Tins.	0 7*	0 9	0 7*	0 9*	—	0 7*
Cinderella Cons. . . .	4 6*	4 6*	4 6*	—	4 6*	4 9*
City and Subs.	8 0*	8 0*	8 0*	9 0†	9 0†	8 0
City Deeps.	54 6†	54 0	—	—	54 6†	54 6†
Cloverfield Mines . . .	9 6†	—	—	9 6†	9 6†	—
Clydesdale Colls. . . .	19 6*	—	19 6*	19 6*	19 6*	19 6*
Concrete Construc. . .	5 0*	6 0†	5 0*	5 0*	—	—
Con. Investments	20 0*	20 0*	20 0*	20 0*	20 0*	20 0*
Con. Main Reefs	12 3	12 0*	12 0*	11 6*	11 6*	11 9*
Con. Mines Sel.	25 3*	25 6*	25 9*	25 3*	25 6*	25 6*
Coronation Frees. . . .	1 0	1 0*	1 0*	1 0*	1 0*	1 0*
Crown Dias.	—	—	—	6 0†	6 0†	6 0†
Crown Mines	—	38 9*	38 9*	38 9*	38 9*	—
Crown Mines Deb. . . .	—	£100*	£100*	£100*	£100*	—
Daggafontein Mines . .	—	23 0*	23 0*	23 0*	22 6*	23 0
Do. Options	4 3*	4 3*	4 0*	—	—	—
East Rand Coals	2 0*	2 0*	2 0*	2 1	2 0*	2 0*
E.R. Minings	20 0†	20 0†	20 0†	19 0†	—	—

'Phone 4673.

Box 3162.

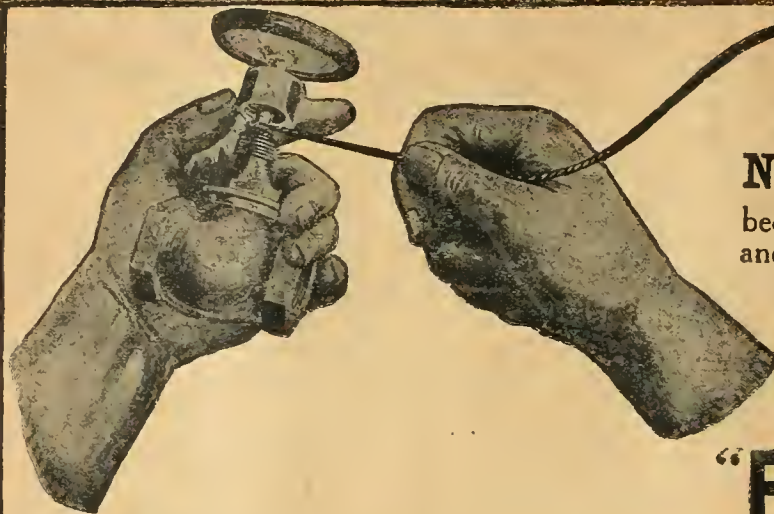
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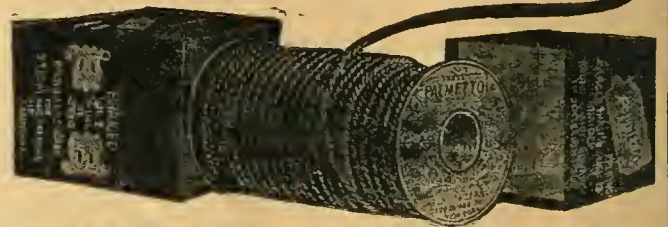
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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Prices Steadier Through Poor Peace Prospects—Influenza Epidemic—Goods Not Accepted by Railways—Coal Position Acute—Hand to Mouth Policy—American Shipping Important—Linseed Oil Down.

THE first German peace note created a sensation amongst merchants holding big stocks as well as speculators more particularly. However, as peace did not come off it gave people a little breathing time to collect their thoughts, therefore values steadied after the brokers' rush to unload goods held by uneasy speculators. The second peace note assisted this view of the position, and although some values are anything but stable, yet the whole is altogether steadier, however always with the chance of further happenings, as the war news continues excellent, backed up by the King's remark that "Victory is within our reach." It may be that very soon business will return to war-normal with much of the speculative element eliminated, thus bringing the ordinary merchant into his own again.

THE INFLUENZA EPIDEMIC.

It is generally acknowledged that the epidemic is improving in Johannesburg, but in the smaller places in the country it is still on the bad side. The position has effected the railway transport department rather badly as non-perishable goods will not always be accepted between Johannesburg and Pretoria and other stations, as it is the case of the availability of the goods trains and the capacity of the staff at the depots. Naturally such a state of affairs

has far-reaching effects throughout all commercial circles; for instance, many bank bills have been held up through people being laid up with the 'flu, also cheques have not been signed at due dates, and no doubt it has in some cases been an excuse not to pay accounts. Again, the coal position has become acute, not only owing to so many natives being ill at the coal mines, but there are the railway transport delays chiefly because of the prevailing epidemic. For example, a firm having its own trollies sent to the railway coal station in Johannesburg for supplies, but were disappointed on two occasions and at last had to pay 1s. per ton extra when they got a little coal to go on with.

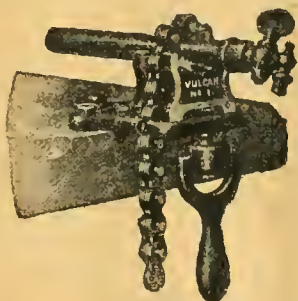
IRON, STEEL, AND OTHER METALS.

The Leeuwpoot tin mines had the greater portion of their natives down with the 'flu and other up-country base metal mines are in a similar state. The few firms connected with the smelted tin industry are having an anxious time because of the rumours of the British Government controlling the price of the metal. However, now that "peace is in the air," that course is very problematical. Although tin is essentially a peace metal as well as a war metal, yet it is not reasonable to suppose that it will keep up at over three hundred pounds a ton after the war. Brass sheets, 4 in. by 2 in., any gauge, are inclined towards easier values because of the general tendency and possibly decent consignments are expected from America. Bar iron and mild steel values remain much the same; however nothing is better, and between brokers and merchants prices are often a fraction less to tempt business. Similar remarks apply to wire nails; one can hardly find two prices exactly alike as between the broker and individual merchant, who is actually a buyer. There is a strong opinion in town that

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all prices of iron and steel are likely to become easier, as more dribbles through from Britain and America. The general enquiries are less, particularly from the country districts on account of the 'flu and the anxiety of dealers in reference to the peace news, as no one is increasing stocks, as right through from the mines downwards it is strictly a hand to mouth policy. The iron moulders' strike is checking the demand for imported iron and local scrap cast iron from the engineering shops and foundries. Without touching upon the pros and cons of the strike, now nearly two months old, it seems a pity that some good Samaritan cannot come along and arrange matters, as this should be the harvest for all engineers and moulders on account of the war conditions giving such a high protection against oversea goods and the difficulty of getting them. A lesson can well be taken in reference to the Johannesburg Municipality obtaining pre-strike tram blocks from Cape-town, presumably oversea goods. Now under peace conditions, whilst the imported mouldings may be a little dearer than before the war, yet with standardisation and more up-to-date machinery and women workers, no South African Government could give a protective duty sufficiently high to prevent the imported articles coming into South Africa. Hence it is only reasonable to suppose that within a few months after the war things will again drop back towards normal, which means that only urgent work will be required to be done in our local workshops, therefore about half the number of workmen will suffice as compared with those employed before this strike occurred.

AMERICAN SHIPPING AND AMERICAN TRADE.

Very important news has been semi-officially obtained that the American shipping is very much easier, so much so that the powers that be have taken it into their heads to clear the New York and other wharves out of belated goods for South Africa. This is actually being accomplished, therefore much American and maybe Canadian goods will

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soon appear at our coast ports. As a rule these goods arrive in South Africa without notice in the ordinary way, but simply telegraph advices from the coast arrive stating that such and such goods are there awaiting urgent instructions for clearance. As regards the American trade, it is rather expected that it may be placed on similar conditions to the British rebate in the Customs duties after the war. Be that as it may, America has been such a big factor in supplying South Africa with mining material, machinery, motor cars, agricultural implements, and general merchandise during this war that in future they will undoubtedly do more, as the shipping route must be good as we hardly ever hear of any mishaps, and it is generally recognised in financial and banking circles that the American manufacturers never make bad debts. Then we have Canada bulging largely into our trade, so that with such keen competition for the world's biggest gold fields, as well as the trade of the diamond mines, it will quickly reduce mining material and other values. Therefore with peace talk it is not surprising that holders of anything like big stocks become nervous.

OILS, COLOURS, PAINTS, WHITE LEAD.

The outstanding feature has been linseed oil. A parcel representing £500 changed hands at about 1s. 6d. per gallon below the recognised price. The actual price did not transpire, as the buyer remarked it might spoil his market. There is just now a good deal of mystery about all prices, because undoubtedly there are nervous holders of certain lines requiring to ease their position in case peace comes along quickly, and after all even six months for peace is not a long while to fix up consignments from oversea. White lead is also an unknown quantity in the merchant to merchant dealings, as there is an idea we might get some South African white lead shortly, but obviously that is problematical—the most that can be said is that work under experts

is going on apace towards producing a commercial white lead. Turpentine is exceptionally scarce, and what little is available here and there the price is variable; however, it is understood that within at least a month further supplies will be received from America. There is an idea that motor petrol is coming from the same source by the middle of November.

TIMBER AND BUILDING MATERIALS.

The timber position is much the same in Sweden, with, however, the exchange between London and Sweden not quite so favourable as last week. There are several cargoes of timber on the way, therefore South Africa need not fear any shortage. The demand has been much interfered with owing to the influenza, as a few jobs have stopped altogether, coupled with the fact that cement could not be had from Pretoria owing to the epidemic. The brickyards also have had in many cases very poor outputs through illness of the natives and white men. Therefore contracts have not been put out for tendering lately, and nothing much is expected before November.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 2 x 3, 2s. to 2s. 1d.; flooring, 4½ x 7 and 6 x 7, 11d. to 11½d. per sq. ft.; ceilings, 6 x 1½, 7d. to 7½d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. 6d. per cub. ft.; clear pine, 1½in. x 12in., 1s. 6d. per foot; lin. x 12in. 2s.; teak, 25s. to 26s. per cubic foot; shelving, 1s. 3d.; Jarrah, 13s. 6d. c. ft.; poplar, lin. x 12in., 1s. 9d.; scantling, 2s. to 2s. 1d. ft.; beaver boards, 11d.; galvanised iron, 24 gauge, 6ft. to 10ft., 2s. 2d. to 2s. 3d.; 11ft., 2s. 3d.; 12ft., 2s. 3½d.; 26-gauge, 6ft. to 8ft., 1s. 10d.; 9ft. and 10ft., 1s. 11d.; flat galvanised, 24 and 26-gauge, 95s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

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BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s. 2 1 1-5 galls.; '0-1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ½in., 8s. 6d.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy-glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin quotations unobtainable; petrol, 39s. 7d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 28s. 6d. to 17s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; ditharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 50s. to 55s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ½in. and 3-16in. round iron, 95s. to 100s.; ¾in. do., 85s.; ¾in. steel round, 80s.; ½in. round iron, 85s.; do. steel, 72s. 6d.; ¾in. round iron, 72s. 6d.; do. steel, practically none in town; ¾in. round iron, 65s. to 67s. 6d.; ¾in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lb. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ½in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 1s. 9d. lb.; ¾in. dia., 1s. 6d., 3½in. and up long 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb; ½in. dia. and 2½in. up long, 75s. per 100lb.; ¾in. diameter up to 2½in. long, 85s. per 100lb.; ¾in. dia. 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 55s. 100 lb.; ¾in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ¾in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s., 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

The Lonely Mine.

The following are particulars of the output of gold, etc., for the Lonely Mine for the month of September: Mill ran 717 hours; crushed 4,950 tons; fine gold recovered, 1,628.435 ozs., value £6,846 8s. 3d.; slimes treated, 4,950 tons; fine gold recovered, 2,954.431 ozs., value £12,421 2s. 3d.; total fine gold, 4,582.866 ozs.; total value, £19,267 10s. 6d.; profit, £9,268 10s. 9d.

Cassel Coal Company, Ltd.

Notice of Special General Meeting.

NOTICE IS HEREBY GIVEN that a Special General Meeting of Shareholders in the CASSEL COAL COMPANY, LIMITED, will be held in the Board Room, Lace Building, Fox Street, Johannesburg, on the 18th DAY OF FEBRUARY, 1919, at 11.15 o'clock in the forenoon for the purpose of considering, and if deemed fit, of approving, with or without modifications, and authorising the Directors to sign and execute with or without modifications and carry into effect the following draft Agreement.—

The draft Agreement purports to be between a new Company to be registered in the Transvaal and named CASSEL CLYDESDALE (SPRINGS) GOLD MINES, LIMITED, or by some other suitable name, as Purchaser, of the first part, this Company and the CLYDESDALE (TRANSVAAL) COLLIERIES, LIMITED, as Vendors to the new Company, of the second part, and SIR ABE BAILEY, K.C.M.G., M.L.A., acting for himself and co-principals, as Guarantors, of the third part.

By this Agreement the Vendors sell and the new Company purchases two portions of the farm DAGGAFONTEIN No. 25, in the District of Boksburg, for the price of 200,000 fully paid-up £1 shares in the new Company, such price to be shared equally between the Vendors. Each of the Vendors will subscribe for at par 50,000 shares of £1 each in the first capital of the new Company, payable 2s. per share on application, the new Company not to be entitled to call up more than 4s. per share (including the initial 2s. per share subscribed) per annum, during a period of two years from the registration of the Company. The Board of the new Company will create a further 150,000 new shares of £1 each and will offer one-half for subscription by shareholders of the CASSEL COMPANY and of the CLYDESDALE COMPANY respectively at par, payable in full on application.

The Board of the new Company will further create within a period of twelve months after expiry of the period of the above offer of shares a further 150,000 shares of £1 each, and each of the subscribers to the first issue of 150,000 shares, shall have the option to subscribe at par for an equivalent number of shares in the second issue. The Board of the new Company may issue Bearer Certificates in respect of the above-mentioned option. The Guarantors guarantee the subscriptions of both of the above-mentioned issues of 150,000 shares.

In consideration thereof the Guarantors receive an option to subscribe for further new shares in the Company not exceeding 500,000 in number at par during a period of five years from the registration of the Company, and a further option to subscribe for shares in the Company, not exceeding 500,000 in number at the price of 22s. 6d. per share, during a period of seven years from the registration of the Company. The Guarantors will assign to the CASSEL COMPANY and the CLYDESDALE COMPANY each a 5 per cent. participation in the above options, over two issues of 500,000 shares each. The CASSEL COMPANY and the CLYDESDALE COMPANY will nominate three Directors on a Board of six, on the first Board of the New Company, the Chairman whereof shall have no casting vote until the capital thereof has been increased beyond £300,000, after such increase the CASSEL COMPANY and the CLYDESDALE COMPANY shall each be entitled to nominate two Directors on the Board. The new Company will not increase its capital beyond £300,000 and the guarantees and options would only become operative if the new Company shall successfully carry out negotiations for obtaining under Mining Lease from the Government a sufficient area of adjacent ground to constitute with the properties sold by the Vendors, a workable mining proposition. Should the capital of the new Company not have been increased to £1,600,000 within three years from registration of the Company or options not have been granted within that period which when exercised would bring the capital up to that sum, or if the property sold by the Vendors shall not at that time have been otherwise dealt with, either the CASSEL COMPANY or the CLYDESDALE COMPANY may call upon the new Company to go into liquidation, in which event each of those Companies shall receive back as far as possible, the property sold by it to the new Company.

A copy of the draft Agreement will lie for the inspection of shareholders at the Office of the Company. The Share Register of the Company will be closed from the 7th to the 18th day of February, 1919, inclusive.

By Order of the Board,

T. L. DAY, Secretary.

Johannesburg.

17th October, 1918.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

In his annual report for 1917 Sir E. L. Brockman, Chief Secretary of the Federated Malay states, says:—Leaving out of the question the paramount necessity of producing as much tin as is required for war purposes, the question of the future of the tin industry in this country is one which deserves grave consideration. The tin deposits of the Federated Malay States are not inexhaustible, but they have been and are being drawn upon at a very rapid rate, and those who are responsible for the administration will after the war have seriously to consider whether they will best serve the interests of this country and of the British Empire, and, indeed, the world generally, by encouraging the more rapid exhaustion of the tin deposits, or whether it will not be more prudent to adopt a policy which will tend to conserve rather than promote the waste of this valuable metal.

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JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY, LIMITED.

(Incorporated in the Transvaal).

Notice of General Meeting of Shareholders.

NOTICE IS HEREBY GIVEN that the Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room of the Johannesburg Consolidated Investment Company, Limited, Consolidated Building, Fox Street, Johannesburg, on TUESDAY, the 26th November, 1918, at 11 o'clock in the forenoon, for the purposes following:—

To receive and consider the Statement of Accounts and Balance Sheet for the period ending the 30th June, 1918, and the report of the Directors and Auditors thereon.

To elect four Directors in place of those retiring, in terms of the Company's Articles of Association.

To elect Auditors, and to fix their remuneration for the past financial year, and to transact any other ordinary business of the Company.

By Order of the Board,

W. H. MARDALL,

Secretary.

Johannesburg.

30th September, 1918.

THE SOUTH AFRICAN

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AND ENGINEERING RECORD.

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Agencies of the Central News Agency, Ltd., at all

News Agents and Railway Bookstalls throughout South

Africa, and at the London Agency as above.

NOTICE.—The postage of this issue of the *S.A. Mining*

Journal and Engineering Record is: South Africa, 1d. All

other parts, 1½d.

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Notes and News.

As from December 1st, Messrs. Bartle & Co., Ltd., of Loveday House, are taking over the whole of the electrical business which was, until recently, conducted by the well-known firm of R. H. Gould & Co., and Mr. R. H. Gould joins the Bartle organization for the purpose of managing this important new section of the Bartle business. By what we already know of this new undertaking, it is going to be a really big thing right from the word "Go," and knowing also something regarding the untiring energy, the honest and very progressive methods of those who control the Bartle doings—to say nothing of the firm's unique resources, makes it safe to predict that rapid strides in the right direction will follow. The "Try Bartles First" habit appears to be one that has become quite general and, incidentally, quite worth while during these times of great uncertainty the end of which is happily now in sight. Considering how successful Messrs. Bartles have been in the meeting of mining and general engineering needs throughout war-time, one cannot do other than imagine that it will be a comparatively easy matter for this firm to reach success limit in the meeting of these and electrical needs when times are again normal.

Mr. D. Christopherson announced at the meeting of the Simmer and Jack last week that Captain Gordon White, the head office secretary of the company, had died from wounds received whilst fighting in Palestine with the Cape Corps. Conscientious, thorough and straight as a die in all that he did, no matter whether it was in the office or on the cricket field or in any line of life, deceased had won the affection and respect of all. He had laid down his life, said Mr. Christopherson, in fighting for those very principles which had moulded that splendid character. To many his death meant more than the loss of a loyal and trusted colleague: it meant the loss of a dear friend. To his parents Mr. Christopherson was sure that the shareholders would wish him to convey their deepest sympathy. Gordon White would long be remembered as a standing example of a man for young South Africans, or for that matter any other youngster, to live up to: a gallant soldier, a gentleman and the very best of sportsman. Mr. G. H. Croote, jun., who was assistant to the late Capt. Gordon White, head office secretary of the Simmer and Jack, died last week from pneumonia. Mr. Croote was one of the most promising of the younger members of the Consolidated Gold Fields' staff. He was anxious to go on active service, but failed to pass the medical examination. Having failed in that direction, he did his best by taking on work and helping in every way he could in the secretarial department in order that others who were medically fit could go on active service, only to die on the very day the sad news of his immediate chief's death was received.

The death occurred this week of Mr. C. A. Corder, at one time Sectional Manager of the E.R.P.M. The late Mr. C. A. Corder was born in the County of Surrey, England, on April 2nd, 1883, and came to this country with his parents some twelve or thirteen years later; he was educated at St. Andrew's College, Grahamstown, where he matriculated. In 1900 he joined the mining classes of the South African College, and in due course proceeded to Kimberley and Johannesburg, where he qualified as a mining engineer. The continuity of his studies was broken by the advent of the Boer War, when he joined Nesbitt's Horse; he was mentioned in despatches, and when on a visit to England about Christmas, 1902, received his decoration from the hand of His Majesty King Edward VII. In 1905, on completion of his studies, he joined the E.R.P.M., Ltd., as a sampler, his outstanding abilities and capacity for hard work soon brought him to the notice of the

head officials, with the result that in 1909 he was appointed one of the section managers, which position he held up to February, 1917, when, owing to ill-health, he decided to give up mining as a profession and take up farming instead. His farming operations were undertaken in the same keen spirit which had marked his mining career, and at the date of his death there were very few better known breeders of pedigree Friesland cattle in the country. His death will cause a gap very hard to fill among the breeders of pedigree cattle. During his long stay at the E.R.P.M., Ltd., he endeared himself to everyone who came in contact with him, and the news of his death came as a great shock to his many friends on these mines. The sincere sympathies of the men of these mines go out to the bereaved widow and little ones in their great sorrow.

* * * *

At the meeting of the Johannesburg Chamber of Commerce last week, the President (Mr. F. C. Sturrock) dealt as follows with the **Importance of Exchange Values.** effects of recent war developments:— His attention, he said, had been called to the remarkable improvement that had taken place during the last few weeks in the exchange value of the pound sterling in the principal neutral countries. He thought economists had as a rule generally regarded foreign exchange rates as being a more or less mechanical index pointing to a state of unbalanced trade, the rate fluctuating up or down in a more or less direct ratio to the swing of the trade. The latest exchange figures quoted would appear to show that exchange rates could be influenced by considerations of an entirely different kind, for it seems unlikely that in the midst of a great allied offensive there had been any material correction of the trade balance. The cessation of hostilities in a manner favourable to the Allies would apparently automatically adjust all exchanges to their normal condition, and this fact should not be lost sight of by those whose business it was to indent from neutral and allied territory. The probability was that cargoes on the water had already been affected by these changed conditions and doubtless the depreciation of values in the aggregate for this country alone would total to a large figure. The ultimate abolition of war risk insurances and the gradual correction of freight rates to their economic level would tend in a like direction, and this further emphasised the necessity for caution on the part of commerce generally at this time.

* * * *

Of late the question of introducing a decimal basis of currency into Great Britain has been widely discussed, and with a view to placing the country on a par with all other civilised countries a measure was recently introduced into the House of Lords by Lord Southwark. The scheme then suggested was considered by many people to be unworkable, and was not even carried to a division. Whether the decimal system will ever be introduced into Great Britain remains to be seen, though in view of the appointment of a Royal Commission consisting of twenty-two members it would appear that a decision upon this important subject has probably been shelved for several years. The Commission consists of Lord Emmott (Chairman), Lord Southwark, Lord Faber, Lord Ashton of Hyde, Lord Leverhulme, Sir Richard Vassar Vassar-Smith, Sir Joseph Larmor, Sir George Groydon Marks, Sir Alfred William Watson, and Messrs. John Westerman Cawston, Sydney Armitage Smith, Charles Godfrey, James Bell, Joseph Burn, Harold Cox, George Hayhurst, Theodore McKenna, Geoffrey Marks, James Francis Mason, Albert Smith, George Murray Smith, and Gilbert Christopher Vyle. According to the terms of the reference the Commission is to consider and report whether it is advisable to make any changes in the denominations of the currency and money account of the United Kingdom with a view to placing them on a decimal basis. Further, if an alteration of the present system is recommended the Commission is requested to decide whether it is desirable to adopt, with or without modification, the proposals embodied in Lord

Southwark's Bill or some other scheme, and, in the latter alternative, to make specific recommendations for consideration by Parliament.

* * * *

The *Morning Post* states that negotiations are proceeding for the formation of a purely British **British Company to Work Ores.** company with a capital of five millions for the purpose of conducting business connected with the winning and treatment of ores and the disposal of metallic products. The company will chiefly concern itself with copper, tin, lead and antimony, and it is proposed to include the Australian output.

* * * *

At the Eldorado, in the twelve months to March 31 last a smaller tonnage was crushed, and as, **Eldorado Banket.** owing to war conditions, expenses rose 1s. 8d. per ton, the working profit showed a substantial diminution. This can be seen from the following figures:—Gold, 1918 £114,011, 1917 £123,964; miscellaneous income, 1918 £2,362, 1917 £2,599; total, 1918 £116,373, 1917 £126,563; working profit, 1918 £51,297, 1917 £63,358; investments and cash, 1918 £48,026, 1917 £47,607; gold reserve, 1918 £9,765, 1917 £11,340; creditors, etc., 1918 £7,572, 1917 £10,655. Apparently the company has disposed of its War Loan and increased its cash, but the total of the items as shown exhibits only a very slight difference. The gold reserve was drawn upon to some extent. The development position is very disappointing, for although a considerable amount of work was done at the 20th and 21st levels, the deepest part of the mine, results were so poor that operations were discontinued. Some compensation was found in excess ore, which yielded 28,035 tons. The reserve, however, has fallen to the very low figure of 31,790 tons, averaging 9.9 dwts. Unless some encouraging discoveries are made the end of the mine is clearly in sight, for the length of the ore shute, never great, has become less in depth.

* * * *

The *Government Gazette* announces that in terms of the Public Welfare and Moratorium Act, His **Price of Paraffin.** Excellency the Governor-General has approved of certain changes in the prices to be charged for paraffin, so that the following shall be the maximum prices to be charged for 150 degrees paraffins: Price to the retailer: At Capetown, Port Elizabeth, East London, and Durban: 19s. net per case of two tins, each containing four and one-sixth imperial gallons, or 23s. 6d. per case of 10 tins, each containing five-sixths of an imperial gallon. At places in the Union other than those above-mentioned: The above prices for the quantities quoted, plus railage and transport charges. Price to the consumer: At Capetown, Port Elizabeth, East London, and Durban, and all centres less than 400 miles from any of these ports: 20s. 6d. per case of two tins, each containing 4½ imperial gallons, or 10s. 3d. for one such tin, or 25s. per case of ten tins, each containing five-sixths of an imperial gallon, or 2s. 8d. per tin of five-sixths of an imperial gallon, plus railage and transport charges. At places in the Union 400 miles or more from the nearest of the above-mentioned coast ports: 20s. 9d. net per case of two tins, each containing 4½ imperial gallons, or 10s. 6d. per one inch tin, or 25s. 3d. per case of ten tins, each containing five-sixths of an imperial gallon, or 2s. 8d. per tin of five-sixths of an imperial gallon, plus railage and transport charges. Both retailers' and consumers' prices above-mentioned to include cases and tins. The maximum prices for 125 degrees of paraffin to be threepence (3d.) per case less than the above, and other prices to be proportionately reduced. In the case of a fraction of a penny arising the price charged to be to the nearest penny per case or tin. Bottle prices for paraffin (consumer to supply the bottle): At Capetown, Port Elizabeth, East London, and Durban: Fivepence per one-sixth of an imperial gallon. At places in the Union other than those above-mentioned: Sixpence per one-sixth of an imperial gallon.—With the exception of the above-quoted amendment Government Notices Nos. 1004 and 1271, dated August 14th, 1918, and September 17th, 1918, shall be read as one with this notice.

The following cable was dispatched this week to the London office of the Bantjes Consolidated Mines, Ltd.:—"Directors regret to announce on the advice of the consulting engineer they have decided to discontinue mining and milling operations at an early date. The prevailing high costs due to the war make continuation of operations impossible for the time being without incurring heavy losses. The incline shaft is now about 50 feet below the 18th level. Reporting on the values obtained below the 16th level the consulting engineer states: 'In a few places where the South Reef and Main Reef have been exposed no values have been found, although there are good values over short stretches exposed in the Main Reef Leader. On the whole the disclosures are discouraging and there is little hope of blocking out any quantity of payable ore for stoping in the immediate vicinity of the shaft. On the immediate east the incline reef is cut off by dykes and faults and any further exploration on this side will take considerable time and money. On the west side all evidence is against proving payable values, except for a short distance just west of the shaft. To continue this shaft in depth and to test new areas by extensive development is the only method of getting into a new payable patch and whether such is likely to be met is impossible for anyone to forecast.' The consulting engineer points out that during the nine months current year about 136,000 tons mined from reserves were on hand at the commencement of the year, the limit of payability to meet present day costs has had to be raised to 5½ dwts., which has had the effect of eliminating a large tonnage for the time being from payable reserves, that there is now immediately available and accessible to the incline shaft about 95,000 tons of the value of 6·3 dwts., that and remaining tonnage which includes blocks scattered throughout the mine would probably average in the neighbourhood of 5½ dwts. To attempt to work from this diminished reserve will so restrict the output that heavy losses will be made. Further, if the mine continues working after the end of the current year an additional sum of about £15,000 to £20,000 will be required for the renewals of plant and equipment, surface and underground, which expenditure he does not recommend. The date for actually stopping milling is uncertain, but it will be before the end of the year. As the future of the mine is so dependent upon the values obtaining at a lower depth than the present workings, the directors have entered into an arrangement with the Consolidated Main Reef Company, on the Bantjes eastern boundary, under which an exploratory drive will be extended from the Consolidated Main Reef western boundary to the point where the Bantjes incline shaft would intersect it about three levels below the 18th level. This drive will be on the leader, and will thoroughly test the large stretch of reef measuring 3,500 feet, and will enable the South Reef to be prospected on the same horizon. The terms agreed to by the Bantjes permits the Consolidated Main Reef to mine ore contained in a strip of claim area situate on the Bantjes eastern boundary, approximately 26 claims, for which right the Consolidated Main Reef is to pay Bantjes a royalty of 1s. 6d. per ton of ore sent to the crusher station, Consolidated Main Reef agreeing to put in the drive referred to on behalf of this company at cost price. The first 1,000 feet of this drive will pass through claim area leased by the Consolidated Main Reef, and will be paid by that company. Under the best conditions a period of three years is necessary to complete the drive to the Bantjes incline, and the values obtained will have an important bearing on what the future development work, if any, is to be undertaken. The ground leased is quite inaccessible to the Bantjes at present. The financial position of the company on the 30th September is:—Cash on hand, £6,080; cash assets, stores, sundry debtors, £31,583; total, £37,663. This excludes the Rand Mines Power Supply Company's compressor account. Whilst it is hoped the revenue derived from the 26 claims leased to the Consolidated Main Reef will be sufficient to meet the cost of the exploratory drive, it is evident that the assets at the company's disposal are sufficient to enable the company to provide for cost should this hope not be realised. Fuller information will be given in the quarterly report, which will be issued in a few days."

TOPICS OF THE WEEK.

A GOLD CONFERENCE.

Four notable things were brought out at the meeting of the leading gold producers of America, who assembled at Reno, Nevada, on August 12, 13 and 14, in response to a call issued by the Governor, Mr. Emmet D. Boyle. These things were a unanimity of opinion that gold mining will almost wholly cease unless Government assistance be extended at an early date; that the gold miners, as the producers of the monetary metal, are opposed to any change in the existing standard on which currency and credits are based; that the Government has definitely placed gold mining on the list of preferred industries as an essential for war finance; and that the working men appreciate their relation to the industry as partners in the production of gold. The attitude of the delegates to the Conference is expressed in the following resolution:

"Whereas gold production in the United States has declined from \$101,000,000 in 1915, to \$84,000,000 in 1917, with a still greater decrease now taking place, the production of California alone having declined \$3,000,000 in the first six months of the present year. And whereas this decrease is principally due to the increased cost and shortage of labour and material, the price of gold, as our standard of value, being fixed by law at the invariable figure of \$20·6718 per ounce, thus being the only important product which has not obtained an increased market price due to the present war conditions. And whereas under present conditions capital cannot be obtained for gold mining, but is generally being withdrawn wherever possible from the said industry. And whereas, on account of the increased cost of production, with no increase at all in the market price of their product, many mines have been forced to cease operations in the last six months, many others are now running at a loss, and are about to be closed down or abandoned, and from their nature will require years to be re-opened, so that a large portion of the gold mining industry is now threatened with extinction. And whereas a war emergency exists, which we are advised by our Government necessitates the maintenance, and, if possible, the increase of gold production in the United States, as of next importance after food and war munitions, being of vital importance as a basis for our continually expanding credits, which are necessary both for the financing of the war and for reconstruction after the war. And whereas the gold resources of the United States are adequate to maintain our former production, and to afford under proper encouragement a substantially increased production: Now therefore be it resolved that it is the sense of this meeting that of all the various measures which have been suggested, the following will be the most effective in maintaining and encouraging the production of gold in the United States, namely, relief by the United States to the gold producers of this country to correspond with the increased cost of production, the extent of such relief to be fixed from time to time to meet changing conditions; but nothing contained in these resolutions, as passed, is to be construed as meaning an intention to alter the amount of gold in the dollar, nor to place a premium upon gold.

The emphasis laid upon the maintenance of sound money, as seen in the last paragraph, will meet with the appreciation of bankers and financiers, and will accord with the desires of Secretary McAdoo to foster the production of gold for the purpose of broadening the foundations of national finance. All doubt as to the exact position of gold in the priority classification was removed by a telegram from Mr. E. B. Parker, Priorities Commissioner, in answer to a request from the Conference for a statement on that point. His reply was: "The following resolution was adopted by the Priorities Board. Be it resolved by the Priorities Board that gold mining is an essential war industry, and the powers of this Board be so exercised as to accord to such industry preferential treatment in the supply, not only of tools, machinery, and equipment, but in the transportation service, fuel, and labour supply." This means that, so far as labour is concerned, the employees at gold mines will be in the deferred classes under the draft, and will not be subject to call except in the event of a serious need, which is not likely to arise. It is evident that the movement for aiding the gold miners has been crystallized under conditions that should ensure public favour. With the expectation of being able to co-operate with the mining associations of the several States, and recognising that the leading gold mines of the country were represented at the meeting, a permanent organization was effected under the national title of the American Gold Conference; and it is not too much to say that the results of its efforts will be watched no less keenly in South Africa than in America.

POSITION AND PROSPECTS OF ZAAIPLAATS TIN.

THE consulting engineer's report on the Zaaipplaats Tin for last year is as follows:—The main outstanding features which have been responsible for the very successful operations during the past year have been: (1) The continued production of high-grade ore from the No. 13 section. Very satisfactory and extensive development of the ore body on steeply dipping fissure planes has increased the number of ore bearing faces, by which means it is possible to augment the output. The prospects in this section are very encouraging. (2) The connecting of the deep level portion of the No. 13 section by means of a transfer level to the No. 6 main incline. This resulted in better efficiency and lower mining costs and a considerable saving in transport and hauling charges. (3) The complete success of the smelting operations. The production of high grade metallic tin at a moderate cost, which has been sold at a considerably greater profit than you would have obtained had the concentrates been disposed of by the usual methods. The acquisition by the company from the T.C.L. of a considerable area of ground in the Zaaipplaats Valley, which, after testing, was found to contain a large payable tonnage of tin bearing alluvium, should when worked, add considerably to the company's profits. The treatment of this ground is about to be started. Despite active boring and prospecting operations, no new discoveries of importance (with the exception of the "pipe" located in the connecting drive, referred to in the manager's report) were made during the year. Several promising sections are at present closed down due to shortage of native labour. The mine continues to be run on economical lines, and working costs may be considered satisfactory.

MANAGER'S REPORT.

The manager writes:—No. 5 section: Work was carried on in No. 5 throughout the year with indifferent results. Most promising conditions exist at all times in the face but no permanent improvement in the ore body has taken place. Development is being continued and a small tonnage of payable ore is obtained from time to time. No. 6 section: Flooding of the working section caused the suspension of work here during the last wet season. Subsequently the shortage of native labour prevented the reopening of the section. Prospects in No. 6 although comparatively poor are by no means hopeless, and it is intended to restart work when conditions are suitable. No. 13 section. Developments in No. 13 were highly satisfactory throughout the year. The ore body conforms roughly to the plane of the fissure and is increasing in size and value. A new and satisfactory feature is the continued steep dip of the ore body. T.C.L. lease: Several small discoveries of ore were made in the early part of the year before shortage of labour caused the suspension of work, which has not yet been resumed. General: The connection was established between Nos. 6 and 13 with great benefit to the ventilation, transport of ore and general efficiency. All ore from No. 13 is now being trammed through this connection. A small pipe was discovered in the connection drive. This has not yet led to the establishment of a new ore body, but the existence of a strong ring and other characteristics, coupled with the situation of the body, marks the occurrence as one of great potential value. Exploration and prospecting: A series of holes were bored on the pegmatite line in the hope of proving the existence of new bodies similar to those on the T.C.L. lease. Results were negative. Alluvial treatment was closed down after all payable alluvium in the Zaaipplaats portion of the valley was exhausted. Small deposits of alluvial ground on the hillsides remain to be exploited. Milling and concentrating: No further work was accomplished with the Mauss centrifugal separator owing to the difficulty in obtaining spare parts under war conditions. These parts are, however, shortly expected to arrive. Experiments were conducted with various types of slime concentrating devices with a view of replacing the existing slime plant which is worn out. A temporary arrangement has been made pending the return of normal conditions.

Smelting: A one-ton reverberatory furnace was completed in October, 1917, followed by a second furnace of the same capacity in June. Excellent results have been obtained from these furnaces and no difficulty is experienced in producing metal of high quality at moderate cost. 543·35 tons of concentrate averaging 70·4 per cent. metallic tin was smelted. The production of refined metal was 328·4 tons, while there is a large quantity of slag on hand estimated to contain 50·28 tons of recoverable tin. Water supply: 48·73 inches of rain fell on 77 days. 62,789,000 gallons of water was pumped from the Sterk River. The pumping station was damaged by floods caused by the excessive rains. An 8 in. borehole was sunk near the mill whence a useful supply of water is obtained when necessary. No shortage of water was experienced during the year. Machinery, plant and buildings: No additions were made to the plant with the exception of the smelting furnaces above referred to. Floods gave considerable trouble during the wet season with the result that maintenance charges were very heavy for a time. Native labour: The average number at work was 450 as compared with 514 during the previous year. Labour was scarce throughout the year owing to effects upon the native of a good harvest and the large sums circulated by returned members of the Native Labour Corps. In normal years labour is plentiful from February to September. The average cost per native shift, after including all charges, was 2s. 0·6d., an increase of 2·5d., as compared with the previous year. Valley alluvial: A section of ground lying in the Zaaipplaats Valley was prospected under option from the T.C.L. Company. A large tonnage of high grade alluvium was proved and an area of 27·75 acres was eventually purchased by the company. Preparations are being made for the treatment of this ground on a large scale. A temporary plant is expected to be in running order in November next. Tonnage statement: Tons mined during the year, 19,524 short tons; waste sorted (12·5 per cent.), 2,446 short tons; sent to mill, 17,078 short tons. Ore reserve: Payable residues available for treatment, 5,780 short tons. No residues were treated during the year owing to the labour shortage. Ore treatment: Days run (15 stamps 24 hour basis 124·7 days), 303; duty per stamp, 9·1 tons; tonnage treated—current ore, 17,078 short tons; alluvium, 5,494 short tons; assay value current ore, 2·8 per cent. M.T. approx.; assay value alluvium, 0·1 per cent. M.T. approx.; concentrate produced—ex current ore, 517 long tons; alluvium, 4 long tons; total, 521 long tons; concentrate purchased during year, 25·1 long tons; assay value of concentrate produced, 70·5 per cent. M.T.; refined metal produced, 735,609 lbs. Working costs, revenue and profits: Working revenue, £116,294 2s. 6d., or 136s. 2·2d. per ton treated; working costs, £50,650 18s. 4d., or 59s. 3·7d. per ton treated; working profit, £65,643 4s. 2d., or 76s. 10·5d. per ton treated. It will be observed that the cost per ton treated, 59s. 3·7d., bears no comparison with that of the previous year, owing principally to the lower tonnage treated. The lower tonnage is accounted for by the suspension of residue treatment and the T.C.L. lease work from which a large and cheaply won tonnage is usually obtained.

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Quarterly Reports of Brakpan, Springs and Daggafontein Mines.

BRAKPAN MINES.

In their report for the quarter ended September 30 the directors of the Brakpan Mines state:—The linear development for the quarter amounted to 4,099 feet, of which 2,485 feet were on reef averaging 8.04 dwts. over a reef width of 38.65 inches. Of the footage on reef, 1,050 feet, equivalent to 42.3 per cent., were in payable areas and averaged 16.78 dwts. over 35.92 inches. No. 3 circular shaft: During the quarter work in connection with the cementation process was continued at this shaft. No. 4 circular shaft: In the first week of the quarter a distance of 12 feet was sunk when a flow of water was encountered. The cementation process has since been successfully applied, and sinking operations were resumed towards the end of the quarter, the footage accomplished amounting to 6 feet. The footage sunk for the period under review was therefore 18 feet, making the total depth at September 30 709 feet. Capital expenditure incurred during the quarter amounted to £32,934 9s. 7d. Since the latter part of September mining operations have been seriously affected by the prevailing epidemic of Spanish influenza. A large percentage of the white and native employees contracted the malady, but fortunately the majority of the cases were of a mild nature. It is hoped that labour conditions will now rapidly become normal.

SPRINGS MINES.

The linear development for the quarter amounted to 4,806 feet, of which 3,245 feet were on reef averaging 15.69 dwts. over a reef width of 22.45 inches. Of the footage on reef, 1,855 feet, equivalent to 57.2 per cent., were in payable areas and averaged 18.60 dwts. over 30.04 inches. No. 3 shaft: Sinking operations were resumed, the total depth reached at the end of the quarter being 192 feet, of which 163 feet are timbered. Six per cent. first mortgage debentures: In terms of the trust deed, the first annual drawing of debentures took place at the head office on August 31, 1918, when debentures of the nominal value of £17,110 were drawn for redemption at par, being one-tenth of those outstanding at April 1, 1918. The numbers drawn for redemption were duly advertised in London and Johannesburg in

accordance with the trust deed, and ceased to bear interest from September 30, 1918. During the period under review debentures of the nominal value of £6,820 were purchased. During the quarter, expenditure on lease area capital account amounted to £53,165, leaving an unexpended balance at September 30, 1918, of £99,136. Since the latter part of September mining operations have been seriously affected by the prevailing epidemic of Spanish influenza. A large percentage of the white employees and practically all the native employees contracted the malady, but fortunately the majority of the cases were of a mild nature. It is hoped that labour conditions will now rapidly become normal.

DAGGAFONTEIN MINES.

During the quarter No. 1 shaft was dewatered and the station recovered, while the dewatering of the main incline was also proceeded with. The cutting of the pump chamber and sump at the bottom of the shaft was resumed, and the installation of the pump column was taken in hand. A breakdown of one of the smaller winding-engines, however, somewhat interfered with the progress of the work. During the early part of the quarter No. 2 shaft was sunk a further 37 feet, making the total depth 682 feet, of which 667 feet are timbered. A distance of 163 feet having been sunk in the cemented zone, sinking was temporarily discontinued, and a start was made with the cementation of the lower portion of the dolomite series. Since the end of the quarter sinking has again been resumed. The Rand Water Board purchased 38,495,000 gallons of water during the quarter. With reference to the option granted to the Daggafontein Gold Mining Co., Ltd., to take up 134,126 shares in Daggafontein Mines, Ltd., at par, for three years from March 28, 1916, the Lords Commissioners of His Majesty's Treasury have intimated that they will raise no objection to the allotment and issue by the London Committee of Daggafontein Mines, Ltd., to the option holders, of the shares for which they have the right to subscribe, provided that the money received in payment of such shares is invested in National War Bonds in the name of the National Bank of South Africa, and that an undertaking is furnished by that bank that such bonds will not be disposed of during the continuance of the war and of one year thereafter, without their Lordships' authority. The directors have accepted these conditions, and during the quarter 1,205 ordinary shares of £1 each have been allotted in respect of options exercised in London. The issued capital of the company has consequently been increased by £1,205, and now stands at £699,238.

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THE YEAR WITH GLYNN'S LYDENBURG.

Points from the Annual Reports.

THE consulting engineer's report on the Glynn's Lydenburg for the year ended July 31, 1918, is as follows:—The features of the year's work, together with those of the previous year are as follows:—Total tonnage milled, 1917 49,832, 1918 46,964; yield per ton milled, 1917 39s. 9·0d., 1918 37s. 9·5d.; working costs per ton milled, 1917 24s. 10·3d., 1918 26s. 7·5d.; profit per ton milled, 1917 14s. 10·7d., 1918 11s. 2·0d.; profit, 1917 £37,103, 1918 £26,235; sundry revenue, 1917 £4,055, 1918 £3,605; ore reserves, 1917 109,126 tons, 1918 138,928 tons; ore reserves (value), 1917 8·9 dwts., 1918 9·8 dwts. The revenue per ton is considerably smaller than it was in the year ended 31st July, 1917, and the working costs show a further increase, chiefly due to the floods in January and to the increase in price of stores. The yield of 37s. 9·5d. is not representative of the capabilities of the mine, and there is good reason to expect improvement in this respect during the coming year. The ore reserves show a material improvement, both in tonnage and value. This is due entirely to the Compound Hill section, which is fulfilling the favourable opinion to which reference was made last year. The reserves in this section have increased from 19,911 tons of a value of 11·2 dwts. per ton to 55,113 tons of a value of 12·2 dwts. per ton during the year. The extremely heavy rainfall during the early part of 1918 had a very serious effect on the profits and rendered it impossible to do any development in the Werf Mynpacht for several months.

MANAGER'S REPORT.

The manager, *inter alia*, writes:—The underground operations comprised the following:—Stoping: Top section, Mill Hill, 6,450 tons; lower section, Mill Hill, 22,176 tons; top section, South Hill, 1,905 tons; Werf Mynpacht, 14,322 tons; Compound Hill, 1,317 tons; total, 46,170 tons. Development work: Driving, raising and sinking: Compound Hill, 5,233 feet; Werf Mynpacht, 1,503 feet; total, 6,736 feet. In addition to the above, 2,042 feet of driving were done in opening up for stoping ground already partially developed. 1,349 feet were also driven in the Werf Mynpacht section as a drainage drive. Ore reserves: The ore reserves were re-estimated and re-valued as at 31st July, 1918, and were as follows:—Mill Hill section, 13,315 tons, value 9·2 dwts. over 12·2 inches; Werf Mynpacht section, 70,500 tons, value 8·0 dwts. over 15·3 inches; Compound Hill, 55,113 tons, value 12·2 dwts. over 13·1 inches; total ore reserves, 138,928 tons, value 9·8 dwts. over 14·0 inches; showing an increase of 29,802 tons and 0·9 dwt. per ton in average value, and 0·6 inch in width, compared with the previous year. An allowance for waste has been made, so that the above values represent, as nearly as possible, the milling value of the ore. The working expenditure and revenue account stood as follows:—Total revenue, £88,756 1s., or 37s. 9·5d. per ton milled; total working costs, £62,520 16s. 6d., or 26s. 7·5d. per ton milled; working profit, £26,235 4s. 6d., or 11s. 2·0d. per ton milled; sundry revenue and interest, £3,605 3s. 10d., or 1s. 6·5d.; total profit, £29,840 8s. 4d., or 12s. 8·5d. per ton milled. Werf Mynpacht: Development operations have been very much hindered in this section by the exceptional continuous soaking rains experienced during the greater part of the year. The floods from underground springs finally put a stop to all mining and development work for the last four months of the year. A new drainage scheme is being carried out now, and it is hoped very shortly to have this section cleared of water. Upwards of 2½ million gallons of water per 24 hours are being pumped from the mine. This new drainage drive, about 1,800 feet long, will have 24-inch reinforced concrete pipes for most of the way, followed by 18-inch pipes on a steeper grade. This should take any water likely to be met with in the future, and prevent the mine being completely flooded in case of stoppage of power.

For the purpose of this drive three new prospecting claims were pegged. The Werf Mynpacht contributed 14,322 tons of ore to the mill during the year, equalling 31 per cent. Osborn Shaft: This shaft, on the block of 34 claims pegged last year, had to be stopped on the 5th January owing to water troubles. It had then reached a vertical depth of 196 feet. It is hoped to re-start this shortly. Mill Hill: This section again contributed the largest portion of ore to the mill, 28,626 tons being sent, or 62 per cent. Mill Hill will have to give place to other sections very shortly, as the tonnage in reserve is rapidly decreasing. South Hill: Very little stoping was done in this section, only 1,905 tons, equal to 4 per cent., being sent to the mill. Compound Hill: Development operations have been steadily pushed on in this section with very encouraging results, but work has been handicapped by want of native labour. The new mine in this section has been connected to the mill by a tramline over Mill Hill—a mile in length. This tramline was completed by the end of July, and ore is now being sent over it to the Mill. A small quantity of ore, viz., 1,317 tons, was sent to the mill via the old tramline through the top section of Mill Hill, from the oldest portion of this mine. The old tramline is being done away with, and the pillars of the drive in Mill Hill through which it passed are being taken out. 5,233 feet of development were completed in this section during the year. 165 new claims were pegged on the southern extension of this section during the year. If the reef continues payable through them, the mine should have a long life. This prospect is encouraged by the fact that good lode has been exposed on claims adjoining the south boundary of the claims in question. The plant is in good running order. A new plantation has been started and 80 acres of wattle trees planted during the year. The old plantations are looking well, and prove very useful for yielding large mining timber, power line poles, etc. Native labour during the year has been short, and the standard of boys obtained very indifferent, greatly handicapping all work during the year. In addition to the high price of all stores, the working costs have been adversely affected during the year by the large amount of dead work rendered necessary in consequence of the flooding of the Werf Mynpacht.

During a police case at Wolverhampton it was stated that there is an extensive traffic in sovereigns in Birmingham. A detective said as much as 25s. 6d. was given by Birmingham agents for a sovereign. It sounds big, but becomes insignificant in comparison with the 1,000 per cent. premium on gold which was the rule in one or two South American republics not so very long ago.



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NATIVE RECRUITING CORPORATION: ANNUAL MEETING.

Review of the Native Labour Situation.

THE sixth ordinary general meeting of the Native Recruiting Corporation, Ltd., was held in the Council Chamber, Transvaal Chamber of Mines, Johannesburg, on Monday, 28th October, 1918. There were present: Messrs. F. G. A. Roberts (in the chair), W. Dalrymple, S. Evans, A. French, F. R. Lynch, J. Munro, H. Newhouse, F. Raleigh, H. A. Read, D. W. Rossiter, W. Ross, J. F. Rutherford, D. Wilkinson, C. H. F. Jenner, and Harold Mayer (acting secretary). In moving the adoption of the report and accounts for the year, the chairman said:—The report and accounts before you deal very fully with the work of the Corporation during the period under review, namely, the year ended 30th June, 1918, and I shall therefore only refer to the more important features of it. During the year the mines of members of the Corporation engaged 178,966 natives as compared with 191,004 during the previous year, while the total number in the employ of members averaged 153,162 as compared with 164,730. The total expenditure of the Corporation for these same periods was £365,786 and £423,169 respectively, and the cost per annum of each unit of strength in the employ of members as a whole works out at 47s. 9d. as compared with 51s. 4½d. for the preceding financial period and 63s. 1½d. for the year ended 30th June, 1916. I referred last year to the increase which was taking place in the proportion of natives coming to the mines on their own initiative, and it is gratifying to record that this increase still continues, the proportion of such natives among new arrivals from British South Africa—that is, excluding local and East Coast natives—for the period under review being 44 per cent. as against 42 per cent., 31 per cent., and 22 per cent. respectively for previous years. The native labour force has again continued to be inadequate throughout the year, the underground strength having averaged only 74·4 per cent. of the total underground complements of members. On the other hand, and at the same time as numerous other industries have been expanding and absorbing more labour, the actual total requirements of members on the present basis of working have increased from 178,316 natives at the 1st October, 1915, to 205,651 at the beginning of this month, due largely to the increased scale of operations on the Far East Rand where 44,886 natives are now employed as compared with only 31,536 on the 1st October, 1915. The causes which give rise to a continued shortage of native labour are both numerous and complex, but there can be no doubt that the actions and utterances of certain misguided individuals in attempting to effect so-called reforms by creating industrial unrest and perpetuating an apprehension of it has a most important bearing on the matter; and it is high time that employees generally realised the baneful influence which these persons have upon the welfare of the mines and the community as a whole. I also referred last year to the urgent necessity of increasing the productivity of such native labour as is available. This necessity is now even more urgent, particularly in view of the disorganisation in the native labour supply which will inevitably result from the present epidemic. The recent favourable references by responsible leaders to the success attending the extended use of drills of the Jack Hammer type on some of the mines show that considerable improvements are being made, but much still remains to be done, especially in the direction of increasing the efficiency of the natives; and in this connection it must be borne in mind that, in common with Europeans, their efficiency and earning capacity can be greatly increased by proper education, supervision, and the more extended use of modern methods and appliances. In regard to the health of natives, during the period under review the number of days lost on all gold mines through sickness per thousand natives per day was 6·85 as compared with 8·48 and 9·28

for previous years. During the year the Corporation's Native Remittance Agency dealt, free of charge to the natives, with 13,853 remittances amounting to £53,058, an increase of about £1,500 on the previous year. Some months ago, with the concurrence of the Government and to meet the wishes of the natives, the Corporation arranged somewhat to elaborate this system, and natives can now defer a portion of their earnings until their return to their homes if they wish to do so. Under the arrangement with the Government the surplus funds accumulating under the system are invested in Treasury Bills, the interest on which, after defraying the expenses connected with the system, will be used for the general benefit of natives under direction of a joint board comprising three representatives of the Government and three representatives of the Corporation, the Director of Native Labour being chairman. In reference to the outbreak of typhus fever which was reported towards the end of last year, the official returns issued by the Department of Public Health show that up to the end of June last there occurred in the Transkei and border territories about 5,000 cases and somewhat under 1,000 deaths, including the death of six Europeans. The cleansing and disinfecting station at Sterkstroom, which is being conducted by the Corporation under arrangement with the Government and the Chamber of Mines, was opened in November last, since when natives and other coloured persons passing through that place, whether they be coming to the mines or not, have been cleansed and disinfected at the station; and there can be no doubt that this precaution has largely contributed towards preventing the spread of the disease not only to the Witwatersrand but also to other areas. Up to the beginning of this month over 83,000 persons had been cleansed and disinfected. The station has worked smoothly from the start, and those responsible for its establishment and conduct are to be congratulated on the tactful manner in which they have handled what was undoubtedly a difficult situation. The position in regard to the prevailing influenza epidemic is, of course, serious, but owing no doubt to the excellent arrangements which exist upon the mines for the proper care of natives, the death rate has so far been comparatively small, namely, about ½ per cent. of the total number of natives employed. Up to the middle of the present month there had occurred on the mines of members about 50,000 cases, representing no less than 33 per cent. of the total native labour force, but of these only 1,855 were still on the sick list at the 22nd instant. It is too soon to gauge the effect of the epidemic upon natives in the Territories, and although in some parts the position appears to be serious, it is being closely watched, and the Corporation is co-operating with the Government in dealing with the matter. The report before you contains reference to those of the Corporation's staff who have been wounded or who have otherwise suffered in the war, and I have to express our deep sympathy with the relatives of Pte. M. Tully, who has been killed in action. Your staff in the head office and in the various native territories have continued to render most loyal service, and your thanks are due to them. In fact, it is no exaggeration to say that the thanks of the community are due to those of them, and to the Native Affairs Department, whose better councils assisted the natives in combating the pernicious influences which worked to bring about an entirely unjustifiable strike in July. On behalf of the Corporation, I wish to thank the various Government Departments with which it comes in contact, and especially the Native Affairs Department and the Department of Public Health. Your thanks are also due to the Chamber of Mines and to the Advisory Committee of Consulting Engineers whose chairman has attended the meetings of your board, and to the mine managers and compound managers. I now beg formally to move the adoption of the report and accounts as submitted. The report and accounts were adopted, and Messrs. Howard Pim & Hardy were reappointed auditors for the current year.

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THE EXPLOITATION OF OUR MINERAL RESOURCES.

Review of the Opportunities Created by the War.

[By T. G. TREVOR, A.R.S.M., Inspector of Mines, Pretoria.]

I.

THE exploitation of the mineral resources of South Africa has been of such recent growth, and the expansion of the gold, diamond, and coal industries has been so rapid and so profitable that nearly all the available capital and energy of the country has been devoted to these industries, and in the past it has usually been only a matter of accident that the presence of other minerals has been recorded. In the last ten years the profitable exploitation of the tin mines of the Northern Transvaal and of the Messina Copper Mine has turned more attention to the question of base or rare metals, but up to the outbreak of war it was the usual opinion that the exploitation of base metals was only possible in the case of very rich mines, favourably situated near a railway. This opinion was undoubtedly strengthened by the reluctance of the mining firms of Johannesburg to engage in other business than in the gold, diamond, and steam-coal industries. Having their capital and attention fully occupied by these, they were not particularly interested in other minerals. (2) There is, however, evidence, both direct and presumptive, that nearly every mineral of commercial importance known occurs in the Union, but such evidence as is published is scattered through hundreds of unindexed publications or buried in the official files of the Mines Department; or more often still absolutely unrecorded except in the memory of some prospector or miner who once struck the mineral, but who, regarding it as of no value, passed it by without development or record. (3) At the present time inquiries are being made for all minerals of economic use, and there is no doubt but that the war has made a complete alteration in the mineral markets of the world, and in the channels of supply to those markets, and that this alteration will be permanent. *If the Union of South Africa has any mineral deposits of value, now is the time to get into the market, and, once in the market, there is no reason why it should ever drop out.* (4) In the writer's opinion, the Union of South Africa possesses a large number of the commercially valuable minerals, and, it is highly probable, possesses many of them in sufficient abundance to be payable; but it is in a very bad position to seize the opportunity of obtaining the market for the reasons given below. It is the object of this paper to call attention to these reasons and to propose some steps towards overcoming them.

II.

(5) Knowledge of the existence of any mineral being in private hands, or if published being unindexed, it is impossible for an inquirer to get in touch with any one capable of telling him where he can obtain what he needs or who can supply it. (6) Base metals being according to law, except in certain cases in Natal, the absolute property of the owner of the ground, it is not to the interest of any one except the owner of the ground to disclose their presence unless he has first made terms with that owner. The owners are themselves usually absolutely ignorant of all matters concerning minerals, and have a very inflated idea of the value of a "prospect," demanding a prohibitive sum as option money, as a preliminary before even allowing any one to look for minerals on their farms. The land companies and big corporations, who hold so much ground in the Transvaal, are in this respect every bit as exorbitant as the most backveld farmers. (7) The real prospector is very nearly extinct within the Union, and such as remain and are called by that name are usually quite ignorant of all minerals, except gold and diamonds. (8) When inquiries are made for a mineral, the inquirers, in the first place, need that mineral prepared for the market, and wish to deal with some one not only capable of supplying it, but in

a position to enter into a contract to supply it in definite quantities for a fixed period. (9) Mineral merchants in England have from time immemorial been complete masters of the situation, and have imposed what terms they pleased on the sellers. In the past, whenever an attempt has been made to market South African ores or concentrates in England, the greatest difficulty has always been experienced with the British ore merchants. These have invariably thrown every objection in the way of new producers, mulcting them for every impurity and charging them for examining ore even before offering to purchase it, and declining to argue or to submit points of difference to arbitration, merely stating "we are so and so, and if you are not satisfied you can go elsewhere." Hamburg merchants did not do this, nor did the Singapore Tin Smelters; these, on the other hand, met their customers in every reasonable way, free of charge, with the result that before the outbreak of war producers of complex concentrates were sending their products to Germany, and all the tin mines shipping their cassiterite to Singapore. (10) Though there may be technical men in Johannesburg and Pretoria who know the chemical properties and theoretical uses of the rarer minerals, there is no authority that can be trusted to give an up-to-date and trustworthy report on their economic possibilities, and advice as to their practical value. (11) The general ignorance of the public on these matters opens a magnificent field for the "wild cat" operator, and there is a distinct danger that the base mineral industry may be discredited at its inception by this class of operator, unless some method of protecting the public is devised.

III.

In the opinion of the writer there is no royal road to overcome the above difficulties, but much might be done to ease the grades by the adoption of the following suggestions, some of which may be politically impracticable, but any of which would help. (12) The appointment of a competent technical officer of the Mines Department to index and co-ordinate all the information possessed by the Government as to mineral deposits and to collect any further information as it becomes available. This is already being done in the case of lime deposits by Mr. Wybergh, who is specially detailed to the work. The Inspector of Mines, Pretoria, is also engaged in collecting and codifying all the available information possessed by the Government, but it will be some time before the result of this work is available.

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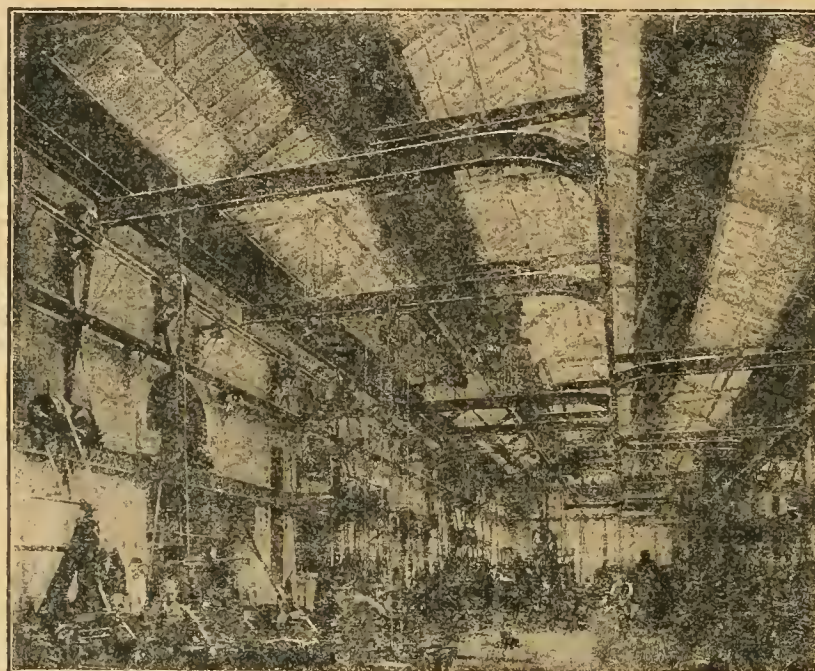
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In the meantime it is desirable that every one owning deposits of minerals of unknown value for which he desires an opening should communicate with the Inspector of Mines for the district in which the deposit occurs. (13) It is probably impossible to deal with base metals on private farms in any other way than by disseminating information as to their nature and value amongst the landowning population. If some common-sense course of instruction in the nature and occurrence of minerals and their practical uses were included in the curriculum of the farm schools, in a similar manner that "nature study" now is in most town schools, it would probably do a great deal to help in this matter; but, of course, the result would not come into action for several years. (14) As the attraction of prospecting on the proclaimed Crown lands of the country has worn off, and no longer possesses the fascination which it did in the early days, it is probably impossible to reproduce a race of prospectors similar to that which explored the country for gold and diamonds in the past; but, in the writer's opinion, sufficient attention is not given to prospecting as an art in the curriculum of the mining schools. A definite, if short, course on this subject should, he thinks, be part of the training, and a certificate for theoretical knowledge of it issued. The law which issues one licence for precious stones, one for gold, and another for base metals, is responsible for the popular idea in South Africa that a prospector is only engaged in looking for one of those minerals; as a matter of fact, a prospector looking for one must have the others thrust on his notice, and it has been the failure to appreciate this in the past that has caused our present ignorance of our other mineral resources. (15) The difficulty in No. 8 can only be overcome if the owners of the minerals will take the trouble to learn what is required by the market, and to prepare even a small quantity of the mineral as a sample. It would then be possible to obtain a quotation for that sample, and they would know approxi-

mately what the value of their product would be, should they determine to work. At the present moment the Mines Department receives many samples, such as china clay, etc., for which it is quite impossible to get a quotation. In this connection it is most unfortunate that the Transvaal, a country second to none in the world in mineral wealth, should possess no museum of practical geology. The materials for such a museum exist in the collections of the Geological Survey, and the staff of that survey are competent to arrange such a collection so as to be of immense practical value, but, so far, lack of space prevents their exhibiting the result of their work. Such a museum, if properly arranged, should consist of exhibits of each mineral and its products in various stages of production, so that the man who believes he has china clay, or steatite, or any other mineral for disposal, could see the ordinary form in which these minerals are found, the form in which they are marketed, and the various products made from them, together with the approximate prices which they command on the market. Such an individual would then be in a position to estimate whether the exploitation of his own raw material was worth proceeding with, and similarly an inquirer for minerals would be able, in such a museum, to see such samples of South African minerals as had been obtained and to find out where they occur, and who are the owners of the deposits. (16) With regard to the difficulty of dealing with the ore merchants in England, this will probably be accentuated after the war, when the disorganization of its industries due to the war has placed German competition temporarily or permanently out of the market, and has given a virtual monopoly to the firms of the allied nations. (17) The difficulty of obtaining competent advice with regard to uncommon minerals may be met by submitting samples through the Mines Department to the Imperial Mineral Bureau or to the Imperial Institute, but the fact that the Mines Department is willing to do this should be more widely known and taken advantage of. (18) The protection of the public against "wild cat" flotations is a difficult question. In the past the only method of exposing these was the asking and answering of a question in Parliament. Though "wild cat" flotations are capable of doing immense harm, it is doubtful whether the public, as such, desires protection against them. What the section of the public most affected desires is a gamble; whether the mine actually exists or not, it does not care. As, however, these flotations are capable of strangling an industry at its birth, and preventing its growth at any time, it seems necessary that the Government should have some power in the matter, even if it were only that of publishing the report of the Inspector of Mines on the property without fear of an action for damages or defamation. (19) Apart from the suggestions given above for the easing of the difficulties, the best method of dealing with the whole question would be the formation of a strong corporation founded for the purpose of encouraging the production of minerals other than gold, diamonds, and steam-coal in South Africa, and prepared to a certain extent to finance such operations. Such a corporation might be under Government auspices, and favoured by Government, as the Land Bank is, though not necessarily financed by it, or even protected by special legislation. The Lancashire Cotton Spinners have such an institution for encouraging the growth of cotton within the Empire, and the suggested corporation might be on similar lines. It would be in the position of being able to finance the development of reasonable "prospects" and of getting the best advice as to the requirements of the markets and methods of preparation, and would be strong enough to deal with the ore merchants on equal terms, and would, in fact, be able to overcome most of the difficulties mentioned in Section II.

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ASSAY SUPPLIES AND THE UTILISATION OF SOUTH AFRICAN MATERIALS IN ASSAY OFFICES.—II.

Litharge.—A certain amount of silver-free litharge is essential unless we are to be driven to the expedient of parting all our assays, and incidentally doubling the European staff. If litharge could be produced locally containing silver in moderate amount and *evenly distributed*, one could determine its amount in a normal charge of flux by running a blank on pure silica and then deduct this amount from every assay bead before taking off the usual 10%+ for silver in the bullion; but I have too often found that when litharge carries more than a trace of silver the amount is distributed very irregularly, making the above procedure impracticable. As it is quite unnecessary to use silver-free litharge when the beads are to be parted before weighing, care should be taken that the small amount of such litharge that is available should be fairly distributed amongst the mines, and should only be used when really necessary. One rather hesitates to use commercial litharge, fearing the presence of impurities variable both as to nature and amount, such as barytes, zinc oxide, etc., which in small amounts would affect the fluxing of the charges and might call for an alteration of one's flux mixture every time a new batch was purchased. Referring to Mr. Toombs' remarks on using litharge as a flux, I certainly think it desirable to allow a little for the slag, and his presumption that a 40 gm. button would be aimed at from a 5 A.T. charge points to an attempt at economising in cupels and in muffle space at the expense of a reasonable allowance for the lead button. Beringer taught us to aim at 300 gm. to 40 gm. for a 50 gm. charge, and I am quite satisfied from my 25 years' experience that 20 gm. is *dangerously low* for a 2 A.T. (or, roughly, 60 gm.) charge. The 5 A.T. charge I take to be for the assay of a slime residue, and since we are nowadays anxious to show up every trace of gold that is possible it seems to me that a 60 gm. lead would be quite small enough to aim at with, say, 50 gm. for the danger limit. Personally, I aim at 50 gm. to 60 gm. for a 4 A.T. residue, the flux mixture weighing about 10 A.T., and in the ratio of six parts by weight of soda carbonate, four parts litharge and one part fluxite. This gives about 106 gm. litharge, of which about 66 gm. is used up for the lead button, leaving 40 gm. to enter the slag. This could be replaced by 20 gm. of soda carbonate, but at the expense of the fluidity of the slag or else a considerably higher temperature, prolonged fusion and more rapid wastage of crucibles and furnace linings. For the other surface samples with 2 A.T. charges I use about 5 A.T. of the same flux mixture but aim at a proportionately larger lead, and thus leave very little litharge in the slag. For mine samples, however, I use a mixture of equal parts of soda carbonate and litharge and one-eleventh of fluxite as before, thus allowing a wider margin for errors of judgment in adding flour or nitre, getting a heavier button instead of a hard and sulphury one if too much flour or insufficient nitre has been added.

Cuprous Chloride Solution.—In making up the cuprous solution we have, for the past seven years at the New Unified, been using *commercial* hydrochloric acid and common salt as supplied to the compound. This necessitates filtering, but as the commercial sulphate of copper and sodium sulphite seldom give a clear solution it is advisable to filter in any case. The sodium sulphite is dissolved in the minimum of hot water and filtered separately, then cooled and mixed cautiously with the acid solution of copper sulphate and common salt. We have not yet tried Mr. Toombs' suggestion, to use copper sulphate, hydrochloric acid and scrap copper wire only, and should be glad of a statement from him of the quantities employed. I am surprised at the inference that the cuprous chloride can be retained in solution without the aid of common salt.

Nitric Acid.—Would it not be feasible for the Rand Co-operative Smelting Works to procure from Vereeniging a suitable earthenware still and condenser, collect our weak acid residues, diluted probably to about 1:5 at most (care being taken to keep the water wash out of the acid residue jar), distil off the excess water containing, of course, a little of the acid and re-sell to the mines the distillate of constant composition the purity of which could be guaranteed if care were taken on the mines to leave a little silver behind in the acid, avoiding that is the addition of any trace in excess of the chloride used in precipitation. A portion of the weak distillate coming over at first could be used for washing out the residual silver nitrate from the still, these washings being tested (after removal of the silver as chloride) for the possible presence in remunerative quantities of platinum and palladium. Commercial nitric acid might be used as "make up," and all the requirements of the assay offices be met by the reduction works. A motor lorry fitted up with glass carboys might be employed to traverse the Reef, east and west alternately to collect and deliver the acid. It is certainly a pity that such an expensive article should be wasted as it is at present.

Sodium Carbonate.—The first samples of the local carbonate of soda which were submitted to me contained a rather large proportion of free carbonaceous matter which gave us very large leads, a fault easily compensated for in samples which call for the addition of flour, but very objectionable in the case of pyritic samples which call for nitre as it is always desirable to keep the latter down as much as possible owing to its tendency to make the charges boil over. I pointed out that almost all this impurity could be removed by redissolving the soda ash, filtering through a rough and ready filter, re-evaporating and calcining; and that a little higher price could be borne, if needed, to pay for the extra treatment. I do not know if anything has been done by the producers, but as we have only a very small proportion of pyritic samples we have been using this material without inconvenience for some time past.

Fuel.—A little economy I effected some six years ago may be worth recording. By keeping an extra muffle door in use I do all the parting without any cost for heat either with primus or other burner or electric heater. A muffle door showing a good red heat over, say, half its inner surface is replaced by the spare one and carried into the parting room, laid cooler side down on a suitable non-conducting support and propped up, if necessary, so that the hot side or top is level. A frying-pan, preferably of aluminium, is placed on it and the porcelain crucibles as the 1:2 nitric acid is poured into them are placed one after the other in a spiral thereon, commencing on the margin and proceeding in clockwise direction towards the centre. A few moments' pause after the crucibles are filled and in situ suffices for heating the acid and beads are flattened and transferred to them in due order. When the brick is a bit too hot and the action becomes violent the frying-pan is lifted for a moment and three little pieces of asbestos board placed on the brick to keep the frying-pan from contact with the hot surface. The handle of the frying-pan should be cut to a length of about 5 in. and have some asbestos cord wound round it and made secure so that it can be easily handled. When the acid treatment is considered sufficient, distilled water is run in preferably by syphoning over from a Winchester quart bottle placed on an adjacent shelf. The slightly cooled and diluted acid is poured off; the empty crucibles being placed in turn on the working bench preferably on a square of asbestos board in the same spiral fashion. Wash water is run on and again poured off and the empty crucibles replaced on the frying-pan, covered with a large filter paper and left about five minutes to dry, then transferred to an annealing tray and annealed in a suitable muffle, preferably one reserved for this work, heated to a fair red and having the slit at the back closed to avoid drawing dust-laden air over the crucibles.

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Mine Boys, beg to inform the Mine and Compound Managers that despite the present high cost of flour, the price for this wholesome and very nourishing food has been practically kept at the pre-war level, thus making Macaroni the most economical food of the present times. Owing to the general increase of the prices of all foodstuffs Soup Macaroni has now been introduced into the native diet by a large number of Mining Companies, in whose Compounds the full content of the Boys has been gained by occasionally changing with Macaroni their somewhat monotonous menu.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

**Merchants' Opinions Erratic on Peace—Values Declining—Tension in Trade Affairs—
Mines Working Down Stocks—Electrical Materials—Japan Gripping Our Market—
Timber: Deals Cheaper.**

THE merchants' opinions as to the war and peace are hanging in the balance—in a state of suspense. Hence many doubts as to the future. It is not too much to say that prices have receded from five to twenty per cent. on the Commercial Exchange for new goods and even more for the second-hand variety. For example, second-hand steel plates are now £30 a ton as compared with £50 in normal war times. These are the Exchange competitive prices, therefore are not meant for general values, but they give the trend of the market as compared with three weeks or a month ago. During the week small parcels of mining material, that is nothing approaching a thousand pounds value, have been offered cheaply. To make the matter clearer, it would seem that clearing-up lines or oddments and even speculative lots are the ones particularly concerned. However, the buyers are doing nothing, therefore the brokers have so far only cautiously offered the goods—just feeling their way. The crux of the matter is as to the interval between now and peace. If it is a quick peace it will not allow sufficient time for people with stocks, especially belated or outside stocks, to realise. However, if the armistice terms are too drastic and the fighting continues, there will be a little breathing space to equalise things. At any rate, it is thoroughly recognised that peace has come within practical politics, and whatever happens there will be much tension in mining as well as other trade circles. The chief buying office, without giving much away, admits that war events are being carefully watched and at the moment the reserves, subject to a four months' supply, are being worked down to that point. In other words only actual requirements are indented for, without any idea of increasing even any special lines, be the temptation ever so great. Then again much mining material and other merchandise are on the way from America, therefore taking it all in all it is not surprising that speculative holders are not happy.

ELECTRICAL MATERIALS.

A less pessimistic tone was adopted by a wholesale electrical dealer. His idea is that no new goods made after the peace period will reach South Africa for six months or so after its manufacture, therefore values are likely to keep up. Dumping may take place after a year or so, but not before. His stock was quite fair and at a price he would rather add to it than sacrifice. It was quite true that Japan had taken a very active grip in manufacturing electrical materials during the war, and the various improvements made since their initial shipments into our markets have been great. He thought that Japan did not intend losing any of that grip but rather increase it. Undoubtedly their prices are very favourable compared with the British or European countries and much more elastic where competition is concerned. Take, for example, 5 amp. switches,

which are 30s. a dozen, as compared with 35s. to 37s. 6d. for British, and even at that difference in price the profit is greater in the Japanese article. The British is the better of the two, but the other answers its purpose all right. This merchant visited the Commercial Exchange during the week at the special invitation of his broker, and he was surprised to see the cutting of prices in his own particular lines, but he thought that this could only be a passing phase. In fact, things would quickly firm up again if the fighting continues without giving way to an armistice.

TIMBER.

It may not be general, but one firm has reduced the price of deals to 1s. 11d. per foot instead of 2s., and scantling is the same. The easier tendency is owing to the more favourable exchange towards London from Sweden, the English sovereign now representing 17.25 kroner, or 19s., which is the best amount since the war started. Fair quantities of timber is offering from Sweden, and there seems no great difficulty in getting neutral shipping. The cables do not particularly press business, but there seems a tendency that way. South African stocks, both on spot and on water, are up to average; perhaps a little below than above, as very little has been purchased since Bulgaria surrendered. Business is very slack indeed, and throughout the month because of the influenza; however, when November opens it is hoped that things will be much brighter, as business is to be resumed as usual on the 1st of the month as regards opening the Exchange and closing it in the afternoon instead of midday.

PETROL AND PARAFFIN.

A cargo of petrol and paraffin has just arrived at Cape-town from Sumatra, which naturally will replenish stocks somewhat, but not sufficient to obviate the Government control. However, other shipments are on their way from America, and immediately those arrive the petrol and paraffin position should soon tend towards normal. Paraffin has risen from 23s. to 24s. per case of 2.4's, but petrol remains the same and it is not expected to be much cheaper in the near future, as the tins and case costs about 10s. and the freight another 12s.

THE TREND OF BUSINESS.

There is very little gossip on the Commercial Exchange, which has an air of depression, owing to the absence of business. Prices are very erratic, and merchants and brokers are in anything but a happy mood, even over the peace business, because if an armistice is arranged it will release a lot of shipping because they would be immune from the attacks of the U boats, for a time at all events. Undoubtedly this is one of the features sticking out to create the most disturbing element as regards the lowering of values, if ever

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to such a slight extent. Then last week the President of the Chamber of Commerce, in his address, called attention to the fact that financial exchanges were going in favour of London, which makes the purchasing power of the English sovereign greater. He also said that the more exchanges become normal the value of merchandise would become proportionately less.

Peace.—Upon the most responsible authority it is said that the Union Government at Pretoria believe peace will be on the way well within another month. One little bit of news which must have a disturbing effect in the mining market is that Bantjes, one of the poor-grade mines, will close down shortly. This is officially announced in a cable to London by the directors.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 1s. 11d. to 2s. 1d.; flooring, 4½ x ¾ and 6 x ¾, 11d. to 1½d. per sq. ft.; ceilings, 6 x ½, 7d. to 7½d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, ¾in. x 12in., 1s. 4d. per foot; lin. x 12in., 1s. 8d.; teak, 25s. to 27s. 6d. per cubic foot; shelving, 1s. 3d.; Jarrah, 14s. 6d. cu. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 1s. 11d. to 2s. per ft.; beaver boards, 11d.; galvanised iron, 24-gauge, 6ft. to 10ft., 2s. 2d. to 2s. 3d.; 11ft., 2s. 3d.; 12ft., 2s. 3½d.; 26-gauge, 6ft. to 8ft., 1s. 10d.; 9ft. and 10ft., 1s. 11d.; flat galvanised, 24 and 26-gauge, 95s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 50s.; and 3 ply, 55s. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s. 2¼ 1-5 galls.; 10—1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ¼in., 8s. 6d.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4s.; petrol, 39s. 7d. 2¼ I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11b.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; antharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 50s. to 55s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, ¾in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ¼in. and 3-16in. round iron, 95s. to 100s.; ¾in. do., 85s.; ½in. steel round, 80s.; ¼in. round iron, 85s.; do. steel, 72s. 6d.; ¾in. round iron, 72s. 6d.; do. steel, practically none in town; ¾in. round iron, 65s. to 67s. 6d.; ½in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ¼in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 1s. 9d. lb.; ¾in. dia., 1s. 6d., ¾in. and up long 1s. 6d. lb.; ¼in. dia. np to 2¼in. long, 77s. 6d. 100lb.; ¾in. dia. and 2¼in. up long, 75s. per 100lb.; ¾in. diameter up to 2¼in. long, 85s. per 100lb.; ¾in. dia. 2¼in. and up long, 60s. per 100lb.; ¾in. diameter, 2¼in. and up long, 55s. 100 lb.; ¾in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in. 95s.; 1¼in. and 1½in., 85s.; 1¼in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ¼in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ½in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 41b., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

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THE WEEK IN THE SHAREMARKET.

A Quiet Market—Prices Generally Firm—Government Areas in Demand.

THE improvement that began to manifest itself on Friday last was maintained to the close. At Saturday's call the volume of business was quite double that of the previous day. The following stocks all showed advances: Zaaipplaats, West Springs and the options, Van Ryn Deeps, Springs, Sub Nigels and the partly-paid shares, Modder Easts, New State Areas, Leeuwpoots, Government Areas, and African Farms, though the last-named were not quite as strong as at the close. On Monday no business was transacted at the opening. Members stood round quietly discussing the death of Mr. Currie, junior partner of Viney & Co. He was highly esteemed by everyone for his excellent qualities and kindly disposition. The Stock Exchange was closed at 3 p.m. for the funeral, which was a military one, Mr. Currie being a member of the I.L.H. and having served through the German-West campaign. The call was a quiet one, with practically no alteration in prices. Geduld Proprietary came ex rights, which meant a difference of 1s. to 1s. 6d. per share. On Tuesday there was a slight improvement in the favourite stocks, with the exception of the Modderfontein group. The chief advance was in Government Areas which reached 92s. 9d. during the course of the day. The market was irregular on Wednesday morning. Government Areas were again strong and in good demand; New Modders recovered a lot of lost ground; Brakpans and Leeuwpoots went weaker; the remaining stocks without appreciable change. Things were quiet at Thursday's call with a falling off in the volume of business. Alkalis, which were weak at the previous day's close, with sellers at 50s., were in the same position. Government Areas lost 1s. from their overnight best. Bantjes, on receipt of the shutting down cable, were freely sold, closing at 3s. sellers. Leeuwpoots were also weak. On the other hand, Springs, Modder Bs. and Modder Deeps were all better. Next to nothing has been done in outside stocks during the week under review. Sales: Makganyene Diamonds, 35s.; Union Tins, 6s. 4½d. and 6s. 9d.; Sakalavas, 9s. to 8s. Buyers of Montealeos, 22s., and Phoenix, 11d., sellers 1s.

Bantjes had a bad knock on Friday morning. Closing at 2s. 9d. overnight they fell at the call to 2s. 1d. and recovered to 2s. 2d. buyers. The following other changes are noted:—Sales: African Farms, 16s. 1d.; Bantjes, 2s. 3d. and 2s. 1d.; Clydesdales, 21s.; Government Areas, 92s.; Leeuwpoots, 29s. 3d.; Lydenburg Farms, 8s. 10d.; Modder Bs., £7 8s. 6d.; South Van Ryns, 13s.; Alkalis, 47s. 6d.; Zaaipplaats, 16s. 3d. Buyers and sellers: Brakpans, 72s., 75s.; Mines Selections, 25s., 25s. 9d.; Daggafonteins, 23s. 6d., 24s.; Rooibergs, 10s. 3d., buyer; West Spring Options, 10s. 6d., 11s.; Wit. Deeps, 11s. 3d., buyer.

	Fri., 25th.	Sat., 26th.	Mon., 28th.	Tues., 29th.	Wed., 30th.	Thurs., 31st.
African Farms	15 11*	16 8	16 10*	16 0*	16 1*	16 1*
Anglo-Americans	—	—	—	—	—	34 0†
Apex Mines	7 6*	7 6*	7 6*	7 6*	7 6*	7 6*
Bantjes	3 2*	3 1½	3 0*	3 1*	3 2	3 0
Brakpan Mines	71 6*	70 6*	—	71 6	70 6	71 0*
Breyten Collieries	10 0*	—	—	10 0*	10 6*	10 6*
Brick and Potteries	3 9*	—	—	3 9*	3 9*	—
British South Africa	—	20 0†	—	20 0†	20 0†	—
Bushveld Tins	0 7*	0 8*	0 7*	0 8*	0 8*	0 8*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 25th.	Sat., 26th.	Mon., 28th.	Tues., 29th.	Wed., 30th.	Thurs., 31st.
Cinderella Cons.	4 9*	4 6*	4 6*	4 6*	4 6*	4 6*
City and Suburbans	8 6†	7 9*	—	7 9*	—	7 6*
City Deeps	53 0*	53 6	52 0*	52 6	52 6*	52 6*
Cloverfields	—	8 6*	8 6*	8 9*	8 6*	8 9*
Clydesdale Collieries	20 0*	19 6*	20 0*	21 0*	21 0*	21 0*
Concrete Construction	5 0*	5 3*	5 0*	5 3*	5 0*	5 3*
Cons. Investment	—	20 0*	20 0*	20 0*	21 0	20 0*
Cons. Langlaagtes	20 0	20 0†	—	19 6*	19 6*	19 9
Cons. Main Reefs	12 1*	12 0*	12 1½	12 1*	12 0*	12 1*
Cons. Mines Selection	25 6†	—	—	—	29 9†	25 0*
Coronation Freeholds	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
Crown Diamonds	6 0†	6 0†	—	4 0*	4 0*	4 0*
Crown Mines	—	37 6*	—	—	—	—
Crown Mines Debentures	£100*	£100*	£100*	£100*	£100*	£100*
Daggafonteins	22 6*	22 6*	—	22 6*	22 6*	23 0
Do. Options	4 0*	—	—	4 6	4 0*	4 9*
East Rand Coals	2 1	2 1	2 0*	2 0*	2 0*	2 1*
East Rand Deeps	0 10*	0 10	—	0 10*	0 10*	0 10*
East Rand Mining Estates	20 0†	19 6†	—	19 3†	17 6*	17 6*
East Rand Props.	4 3*	4 3*	4 9†	4 4	4 5	4 6*
East Rand Debentures	£63*	—	—	—	£65	—
Eastern Gold Mines	1 1*	1 3*	1 3*	1 3*	1 4*	1 5
Ferreira Deeps	10 0*	—	10 0*	10 6*	—	—
Frank Smith Diamonds	3 4*	—	—	3 6*	3 7*	3 7*
Geduld Props.	33 9	38 9*	37 6A	37 3	37 9	37 0*
Glencairns	2 0†	2 0†	—	2 0†	2 0†	2 0†
Glencoe Collieries	6 0*	—	—	6 0*	6 0*	6 0*
Glynn's Lydenburgs	24 3†	24 0†	24 3†	22 6*	23 0*	23 3*
Government Areas	89 3*	90 0	90 0	91 9	92 9	92 9
Jupiters	4 0*	4 0*	4 0*	4 0*	4 0	4 3*
Klerksdorp Props.	2 11*	—	3 1†	3 0*	—	3 0*
Knight Centrals	4 9	4 9*	4 8*	4 8*	4 9*	4 9*
Knights Deeps	5 0*	5 0*	—	—	—	—
Lace Props.	11 6*	11 6*	11 6*	11 9*	11 9*	11 7*
Leeuwpoot Tins	29 0	30 9	31 0	31 3	29 9	28 9
Lydenburg Farms	8 8*	—	9 0	—	8 9*	8 9*
Main Reef West Debs.	£60*	£60*	—	—	—	—
Meyer and Charltons	—	85 0*	—	—	87 0*	—
Middelvie Estates	—	—	1 0*	—	1 0*	1 0*
Modder B's	161 6*	162 6	162 6	161 3*	163 0	164 6
Modder Deeps	147 0†	145 0*	146 0	145 0*	146 0	147 6*
Modder Easts	20 6	21 3	21 0	21 0	21 0	21 0
Do. Options (3 years)	6 3*	6 4	6 4	6 0*	6 2*	6 0*
Do. Options (4 years)	7 2*	7 3*	7 6	7 4*	7 4*	7 6†
Hume Pipes	32 6*	32 6*	34 0	32 6*	33 0*	32 6*
Natal Navigation Colls.	19 0*	—	19 0*	—	—	19 0*
National Banks	—	—	—	£14†	£14†	—
New Bok-burgs	—	—	—	—	—	0 10*
New Eland Diamonds	23 0*	23 0*	23 9*	23 0*	—	23 0*
New Era Cons.	10 4*	10 3	10 0*	10 0*	10 0*	10 1*
New Geduld Deeps	5 7*	5 7	5 6*	5 6*	—	5 6*
New Heriots	13 0*	13 0*	13 0	12 6*	—	12 6*
New Kleinfonteins	13 0*	13 3*	13 3	—	12 6*	13 3†
New Modderfontein	530 0*	540 0†	—	532 6*	543 0	545 0A
New Unifeds	—	6 0†	—	5 6*	—	—
Nigels	4 0*	4 6*	—	4 0*	—	—
Nourse Mines	—	17 0*	—	—	—	—
Pretoria Cements	70 0*	70 0	71 0	71 0	71 0†	70 0*
Princess Estates	3 3*	3 3*	3 3*	3 3*	3 3	3 1*
Rand Collieries	2 6*	2 6*	2 6*	2 6*	3 0*	2 6*
Rand Nucleus	1 5	1 4*	—	1 5*	1 5*	1 5*
Rand Selections	—	85 0	—	84 0*	86 0†	84 0*
Randfontein Deeps	4 6*	4 9*	5 3*	5 6*	5 3*	5 9†
Randfontein Estates	15 3*	15 6*	15 6*	15 9*	15 6*	—
Rooibergs	10 0*	10 3	10 0	10 0	9 9*	10 1*
Roodepoort Uniteds	—	3 6*	3 6*	3 6*	3 6*	3 6*
Ryan Nigels	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Shebas	1 0†	—	—	—	1 0†	—
Simmer Deeps	1 6*	1 6*	1 6*	—	1 6*	—
S.A. Breweries	—	—	—	31 0*	34 6†	35 0†
S.A. Lands	6 5*	6 4*	6 5*	6 4*	6 4*	6 2*
Springs Mines	68 6*	69 0*	69 6	70 0	69 9*	70 6
Sub Nigels	27 0	27 3	37 3	27 6	27 3*	27 3*
Swaziland Tins	—	—	—	—	—	31 0†
Transvaal Lands	—	—	19 6*	20 0*	20 6*	20 6*
Transvaal C.M. Estates	16 0†	14 6*	16 0†	15 6†	15 0†	13 6*
Van Ryn Deeps	69 3*	69 6	69 6	69 6†	70 0*	71 0†
Village Deeps	15 6*	15 6*	—	15 6	—	15 6*
West Springs	24 0	24 9	24 9	24 9	24 3*	24 3
Witbank Collieries	50 0*	—	—	—	—	50 0*
Wit. Deeps	10 0*	—	—	10 0*	10 6*	11 0
Wolhuters	3 0*	—	—	3 0*	3 0*	3 3*
Zaaipplaats Tins	16 3	16 9	16 6*	16 9	16 6*	16 6
Union 5 per cents.	—	£105½†	£105	£105	£105*	£105†
New States	19 9	20 0	19 8*	19 6*	19 9	19 9
Southern Van Ryns	12 3	12 0	13 3	13 3	13 3	13 0*
S.A. Alkalis	50 0*	—	—	52 6*	50 0*	50 0†
De Beers Preferreds	£13½*	—	£13½*	—	£13½*	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.

Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—VI.

Lessons for South Africa—The Electrification of the Chicago, Milwaukee and St. Paul Railway.

THE following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E.:

I have referred, in my previous remarks, to the three-phase electrification of the Italian State Railways and to the split-phase Norfolk and Western electrification, and propose now to give a brief description of each, together with a short description of the 5,000 volt D.C. equipment to which I have also referred. I make some apology for this digression, inasmuch as it does not arise directly out of the paper we are discussing, but as far as I am aware, no detailed description of the Italian State Railway electrification has yet appeared in the Technical Press, the Norfolk and Western electrification is, I think, sufficiently interesting to merit some description in the *Transactions* of this

situation. In 1915, the last normal year, 10,000,000 tons of coal were imported, representing a sum of 350,000,000 Italian lire at the current prices, and of this quantity one-fifth was consumed by the State Railways alone. In 1897, it having been agreed that a general electrification scheme would be the best, cheapest and quickest solution of the problem, the Government appointed a committee of railway engineers, consisting of two engineers from the Ministry of Public Works, and two from each of the two largest railway companies—the Mediterranean and the Adriatic Railway, which at that date had not been taken over by the Government. The terms of reference to the Committee were, broadly, to examine existing railway electrifications in other countries, carry out experimental work, and make a final recommendation as to the best system to adopt for the

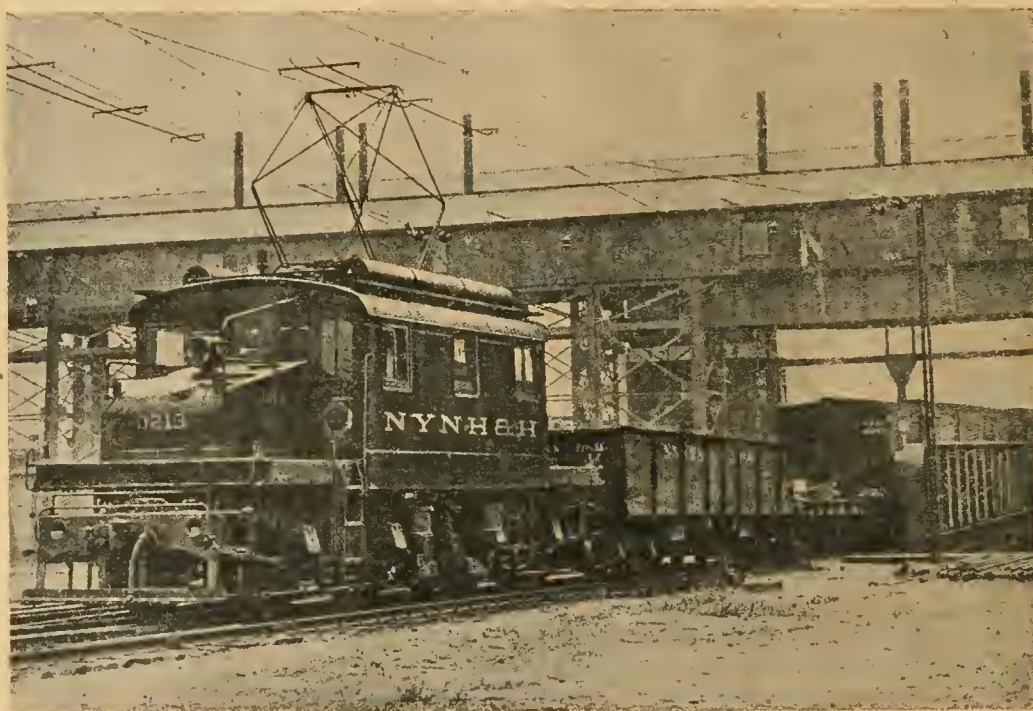


Fig. 6.

80 TON WESTINGHOUSE SWITCHING LOCOMOTIVE, NEW YORK, NEW HAVEN AND HARTFORD RAILROAD.

Institute, and the short account of our 5,000 volt D.C. system is collateral to any information Mr. Kirkland may give in response to the point raised by Mr. Gould as to mercury rectifier operation. The electrification of the steam railways in Italy was initiated primarily to solve a problem of national importance. The lines approaching the port of Genoa had practically reached their maximum capacity with steam traction, and any increase in capacity could only be obtained by constructing new lines, which, owing to the geographical situation, would have involved the construction of very long tunnels, entailing enormous expense, and taken many years to complete. With the limit of steam traction, the congestion at the port was getting steadily worse, and something had to be done to relieve the situation. Further, the importance of utilising the country's natural resources in the way of water power was becoming more and more recognised, and if the importation of coal could be reduced in consequence, this would not only be a national economy but would help also to ease the traffic

special Italian conditions. At that date, D.C. electrification was practically confined to town and suburban work, and was essentially a low voltage proposition. The single-phase motor had not been developed, and the first experiments with three-phase motors for railroad traction in America had not been successful. It therefore says much for the courage of these Italian engineers that they recommended the experimental equipment of the Valtellina lines of the Adriatic Co. on the three-phase system. They were no doubt largely influenced in their decision by the commercial necessity of the high voltage contact line in any general railway electrification of so extensive a nature, and by the extreme desirability of adopting a system which would permit of regenerative braking, many of their lines being extremely mountainous. Their decision was no doubt also supported, and to some extent influenced by the very valuable experimental work of the Ganz Co. The choice of the Valtellina line for the experiment was particularly suitable, because, although the actual traffic at that date was

limited, all the engineering difficulties that would have to be faced on other more important sections were presented. There were long and heavy gradients, reaching 2.2 per cent., between Colico and Chiavenna, sharp curves having a radius of 300 metres, and a great number of tunnels, particularly between Lecco and Colico. The traffic was very varied, both passenger and freight, light and heavy, and, in addition, it was intended to run experimental trains of all kinds, with a view to thoroughly trying out the system and collecting all the data obtainable. I think it will be agreed that this policy was admirable, with that admixture of boldness and caution which was almost bound to ensure success. The proposition encountered the usual amount of criticism—the difficulties in connection with two contact lines, the small air gap of the motors, the limited number of economical speeds, etc. After much experimental work had been conducted, electric traction on the two branch lines—Colico-Sondria and Colico-Chiavenna—was commenced on September 4th, 1902, and extended to the Colico-Lecco branch on October 15th of the same year, and after the usual initial period with the inevitable minor troubles and delays, due to the application of any new system, were overcome, and

normal service was assumed, it appeared that the numerous objections to the system, so freely advanced in the initial stage of the scheme, did not exist in actual practice. The constructional difficulties of the overhead line, and little anticipated difficulties with the motors, such as unequal loading due to tyre wear and so on, were all satisfactorily overcome, and the so-called rigidity of the system, with the small number of economical speeds (in the first locomotive only two speeds were obtained, parallel and cascade) was, in the opinion of the railway operating engineers, who were after all the best judges, as they had all the responsibility for the service and none of the bias of the manufacturer, not a disadvantage at all, but a very considerable advantage from a train despatching and general operating point of view. It is interesting to note later how this view is endorsed 14 years afterwards by the Norfolk and Western engineers. For many years the Valtellina lines constituted an excellent experimental field, in which it was possible to develop the system to perfection in all its details. The fullest advantage was taken of this opportunity, with the result that it was decided to proceed with the electrification of other lines, which for intensity and weight of traffic were the most important in the State railway system.

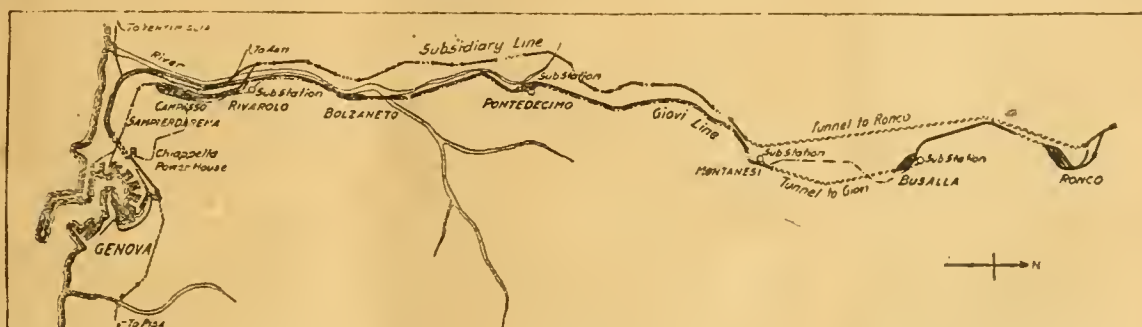


Fig. 7.

MAP.—GIOVI ELECTRIFICATION, ITALIAN STATE RAILWAYS.

The list of certificates issued by the Mines Department for the month ending 30th September, 1918, is as follows:—
Mine Overseers' Certificates (Metalliferous): E. G. Adam, C. E. N. Fradd, M. Halliday, C. W. B. Jeppe, A. W. A. May, C. H. O'Reilly, E. A. Quayle, H. Saunders, W. White. Assayers' Certificates: N. M. Galbreath, S. A. Lange, G. J. Nicol, E. Samuels, H. G. Stanton.

Swaziland Tin.

The following are the results of the operations of the Swaziland Tin Company for the month of September, 1918: Concentrate recovered, 32.5 long tons; estimated profit (taking tin at £290 per ton), £2,406; less adjustments in respect of previous shipments, £189; total, £2,217.

Messrs. Samuel Montagu & Co., in their weekly bullion market circular dated September 12, say:

The Bullion Market.

The Bank of England gold reserve against its note issue shows an increase of £783,255 as compared with last week's return. For the first time since the beginning of 1915 the gold reserve has touched £70,000,000, and approaches the highest amount held since the commencement of the war—namely, £72,570,142, held on November 19, 1914. The lowest held during the same period was £49,845,650, on August 2, 1917. We learn that in Austria there is such an abundance of paper money that their currency is quite discredited, and in certain localities goods can be only obtained by barter.

FIRST BEST

PRICE'S Candles

for Mining and General use

made in South Africa

BURN BRIGHTLY AND ECONOMICALLY

THE BEST of the Superior Candles

PRICE'S (SOUTH AFRICA) Limited
LONDON, CAPE-TOWN & JOHANNESBURG

Company Meetings.

SIMMER AND JACK.

Mr. Douglas Christopherson, C.I.E., managing director Simmer and Jack Proprietary Mines, Ltd., presided at the 20th annual meeting of the company on September 25th, and in moving the adoption of the report of the directors and accounts, said:

In dealing with the report and audited accounts which are now before the meeting, I will as usual deal first with the revenue and expenditure statement. The declared working profit for the year ended 30th June, 1918, was £195,304 and sundry revenue was £24,164, thus making a total of £219,468. From this, however, was deducted £39,663 in respect of payments to the Miners' Phthisis Compensation Fund, sundry amounts written off, special war expenditure, and taxation, leaving £179,805 carried to appropriation account. Two dividends were declared equal to 3½ per cent. for the year, absorbing £112,500; the reserve for additions to and renewals of machinery and plant accounted for £2,231, while £138,193 was carried to the balance sheet. Referring now to the balance sheet: On the debit side there are really only two items of which I need make mention, namely (1) Reserve gold £3,750, as compared with £16,667 in the previous balance sheet; and (2) the balance (shown under sundry creditors) payable to the Simmer Deep, Ltd., in respect of the rights to mine some 40 odd claims, viz., £30,528 as against £63,309 at 30th June, 1917. This is due to the fact that instead of paying off the debt by means of the usual annual instalments of £12,400 applicable over five years as from and including 31st December, 1917, we paid off in March last an additional sum of £20,000 in respect of that debt. This is in pursuance of the decision to which you may remember I referred at our last annual meeting, when I stated that as the actual profits were at times abnormal, due in some measure to the success of sand filling underground, enabling the management to remove certain standing pillars, the ore contained therein being at times of high value, and also thoroughly to clean out stopes before their abandonment; it was decided to build up the Reserve Gold Account which at 31st December last amounted to £33,333 whenever such opportunity offered, with a view to the earlier liquidation of the debt to the Simmer Deep Company (which under the agreement we are entitled to do instead of spreading it over the full five years in equal instalments) and thereby relieve future profits during the later stages of the life of the mine. Hence, therefore, the decrease at 30th June last of the gold reserve. I think that shareholders will appreciate, in view of subsequent events to which I will refer later on, that we have acted wisely in endeavouring to get rid of this liability as quickly as possible. Had we not made this payment of £20,000 a further payment of £12,400 would have been due at 31st December next; your board may yet decide to make this payment, in which case the liability to Simmer Deep will be reduced to say £18,000.

The Credit Side.

Taking the credit side of the balance sheet the estimated value of the company's interests in various townships, has, in consequence of sales of stands during the year, been reduced by £3,257 and now figures at £41,215; while buildings on townships remain the same. Investments, etc., stand at £7,048 as against £12,428 previously, the reduction being mainly accounted for by the disposal of Breyten Collieries shares, thus increasing our actual cash available. Moreover, it will be observed that we held local registered 5 per cent. stock of the Union Government to the extent of £1,372. We received this stock plus interest, from the Government, in terms of the Bewaarplaatsen Moneys Application Act of 1917, the amount representing our proportion of Bewaarplaatsen moneys in respect of the sale of undermining rights on the farm Bloemfontein No. 11 by virtue of the company's freehold interest therein. The Union Stock in question has since been sold, thereby slightly strengthening the company's cash position. The company also received, by virtue of the aforementioned Act, an amount of £351, being half share of accumulated rents received by the Government in respect of the sale of the same undermining rights, for the period ended 30th September, 1917. Since that date the half share of rents in this respect is being paid to the company by the Government in the ordinary way of estate owners' share of licences. I do not think that there are any other items on the credit side of the balance sheet which I need specially deal with, except that I might mention in passing that our liquid assets as shown in the balance sheet amounted to £257,250, while the cash liabilities were, say, £168,450, so that at 30th June last the liquid assets were £88,800 more than our liabilities.

As to the results of operations during the year under review, compared with those for the previous year, and the disabilities under which the work has been carried on, these are dealt with in the reports by your consulting engineer and mine manager. There was a decrease of 325 underground natives and 27,250 tons milled for the first half of the past financial year, and a further decrease of 222 natives and 52,650 tons milled for the second half of the year, the lower tonnage duty per native during the last half of the year being attributable chiefly to curtailed hours of employment and the short Saturday shift obtaining since 1st January, 1918. It will thus be seen that the tonnage milled was 79,900 tons less than for the previous year. Although the grade of ore milled was improved, the average declared recovery value of gold being higher by 1s. 8.424d. per ton milled, working costs nevertheless showed an increase of 1s. 11.233d. per ton, largely due to the reduced tonnage, so that the working profit was lower by 2.659d. per ton—in other words, the total declared working profit was £195,304, or £31,863 lower than for the preceding year. You will also remember that operations were considerably hampered during the last wet season in consequence of the abnormally heavy rains, which caused a great influx of water to the mine workings; for instance, during the month of January last the daily

quantity of water handled amounted to 1,050,000 gallons as against the normal daily average of 400,000 gallons.

Pre-War and Present Operations.

As regards the increased costs in connection with your company's operations as compared with pre-war days, I have had some figures prepared which should prove interesting as well as instructive to the large body of shareholders and to the public generally. They are as follows:

For the Financial Years ended
June 30.

	1914.	1918.
Tons milled	769,600	685,400
White wages	£193,071	£211,400
Native wages	65,693	97,843
Stores	167,285	233,512
Sundries	49,607	54,034
Totals	£475,661	£596,589

Costs per Ton Milled.

	s.	d.	s.	d.
White wages	5	0.209	6	2.024
Native wages	1	8.488	2	10.261
Stores	4	4.168	6	9.696
Sundries	1	3.470	1	6.921
Total costs per ton	12	4.335	17	4.902
Value of recovery per ton	20	8.962	23	1.289

Working profit per ton 8 4.627 5 8.387

These figures in themselves afford ample evidence of the disadvantages under which operations are being carried on, and it is regretted that it was impossible to pay larger dividends in respect of the past financial year. It is impossible to say when the cost of stores will come down, but I should like to mention that the Central Buying Committee, under which nearly all stores are pooled, has done excellent work. The control exercised by that committee, together with the co-operation of the Government and commercial community generally, has greatly facilitated the obtaining of the requisite stores, and such control has tended to keep down the prices. We continue to suffer through shortage of native labour, and according to the last returns the number in the company's employ was 3,276, equal to only 70.18 per cent. of a total complement of 4,668. It is difficult, however, to foresee the native labour position for some time to come, as in view of the spread of the influenza epidemic to the native territories, the shortage of such labour may become acute and have very adverse effects upon mining operations generally.

Small Rock Drills.

As will be noticed from the reports of the consulting engineer and mine manager, very good results have been obtained on your mine with small rock drilling machines of the jack hammer type, which have proved both efficient and economical. Your manager's figures corroborate those previously obtained at the Robinson Deep, and show that as compared with the hammer boy there is a saving of about 80 per cent. in the native labour used with jack hammers, besides a saving in the explosives used per ton broken, and an appreciable saving in the total cost per ton of ore broken. As cir-

circumstances warrant, more of these machines will be introduced; and the gradual replacement of the hammer boy by these machines should be brought about.

Reverting to the increases in working costs, the manager, Mr. C. H. Greathead, made careful investigation into these a few months ago, and it will be of general interest to give the main figures, namely:

The increase in working costs, due to various causes, as tabulated below, amounts to approximately £3,694 in wages per month, or a total increase of nearly £45,000 a year.

	Per month.
Wages paid to extra men signed on to comply with Mining Regulations and agreement with unions	£1,063 7 7
Extra pay due to leave regulations	437 17 3
Additional payments due to agreements with various unions	459 14 4
	£1,960 19 2
Payment to dependents of men on active service . .	734 3 3
War bonus	999 4 7
	£3,694 7 0

In addition to the above the costs are also adversely affected by the shorter working hours and by the shortage of skilled men. Timbers rot faster underground than they used to owing to the warm moist atmosphere due to the increased amount of water used for dust allaying which means increased cost of maintenance; on a conservative basis this amounts to one-ninth of our total timbering costs. The chief increase in the cost of timbering, however, is due to the increased depth of workings and the heavy nature of the ground.

The total amount paid during the past year on account of men on active service, including grants to the dependents of such men was £9,005, while the grand total in this respect from August 1st 1914, to June 30th, 1918, has been £30,300.

Developed Ore Reserves.

It will be seen from Mr. C. D. Leslie's report that the estimated fully developed ore reserve at June 30th, 1918, was 1,533,000 mine tons, of an average value of 5.67 dwts.; and the estimated partially developed ore was 211,000 mine tons of an indicated value of 4.93 dwts. The comparative figures at June 30th, 1917, were 1,662,000 mine tons of 5.3 dwts., and 401,000 mine tons of 4.73 dwts. respectively. Thus in each case there is a decreased tonnage and an increased value, but the figures are not strictly comparable, for, as Mr. Leslie points out, they were obtained after eliminating a considerable tonnage of a value below that which can be dealt with profitably under present conditions of mining. In addition to the figures of eliminated ore reserve, the Consulting Engineer points out that there is a large tonnage of reclamation rock which is expected to yield a profit, but which has not been included on account of insufficient information.

The New Claims.

I wish now to refer to the matter of the extraction of the ore from the 40-odd claims, the rights to mine which are purchased from the Simmer Deep, Ltd. Owing to the congestion which would arise in working this area through the existing No. 2 vertical shaft on your property it

became necessary to make arrangements for dealing with the tonnage to be mined from these claims through the Rhodes Vertical Shaft belonging to the Simmer Deep Company, which shaft enters the workings of that area. Plans and estimates were prepared for deepening the Rhodes-Vertical Shaft for a distance of about 230 feet and for equipping it with a powerful hoist to deal with up to 30,000 tons of ore per month from the lower levels of No. 2 shaft section and the 40 odd Simmer Deep claims, and your directors have sanctioned the necessary expenditure of about £33,000 therefor, namely, surface equipment £46,500 and underground equipment, etc., say £36,500. Mr. Leslie says that eventually this shaft would be the means of dispensing with ore hoisting in the No. 2 vertical and incline shafts. As against the proposed surface expenditure of say £46,500, the cost of renewal of No. 2 shaft crusher station would be saved. The expenditure (viz. some £24,000 net) on the sinking and equipment of the sub-incline shaft from the 36th to the 41st level will be begun about the middle of the year 1919 and completed by the end of the year 1920. The other expenditure, namely about £59,000, will be completely expended soon after the end of December next. Under the new programme Mr. Leslie estimates the additional profit over the life of the mine will not be less than £200,000 on account of (a) saving in working costs, (b) shortening the period of deferment of profit from the tonnage referred to, and (c) fuller exhaustion of ore at the end of the profitable life of the mine. It will thus be seen that a large additional profit over the life of the mine working under the new programme would be chiefly a result of being able to maintain a higher rate of output at less cost per ton, and of being able also to extract a larger profitable tonnage than would otherwise be obtained before the working of the mine has to be finally abandoned.

The whole question has been considered carefully by Mr. C. D. Leslie, our consulting engineer; Mr. O. P. Powell, our superintending engineer; Mr. A. C. Holtby, our consulting mechanical engineer; and by the mine managements of the Simmer and Jack and Simmer Deep, and, of course, the matter has been thoroughly gone into by your directors, and much as we dislike having to face this considerable amount of capital expenditure, nevertheless in view of the advice of the engineers, there was no alternative course, but to agree to the scheme, in order to derive the fullest benefit from the acquisition of the Simmer Deep claims. These claims have been entered, and preparatory mining work is being done in order to connect the bottom levels with the Rhodes shaft and it is hoped that this scheme will be in running order about May next.

Dividend Not Expected.

And now as to the future: In view of this capital expenditure and seeing that at December 31st next a further payment of £12,400 may be made to the Simmer Deep Company in respect of these claims; also in view of the somewhat serious adverse effects anticipated on working profits as the results of the Spanish influenza, a dividend at the end of this year can hardly be expected. You will see from the mine manager's report that 84 men are still on active service, the total number who have proceeded to the front being 193 (24 of the latter having gone on active service during

the year under review). Since addressing you last year it is with much regret that we have learned of the following war casualties among your employees:—Ivan F. Hind, H. B. Howard, and H. J. W. Laing, killed; R. T. Green, M. H. O'Meara, and S. C. Blake, missing. I have already conveyed sincere sympathy to the relatives of those men who have lost their lives, and as regards the men who are missing, we most earnestly trust that they may prove to be all right and that they will eventually be restored.

Tribute to Captain Gordon-White.

In addition to the above it is with the deepest regret that we heard yesterday that Captain Gordon White, the head office secretary of this company, died from wounds received whilst fighting in Palestine with the Cape Corps Regiment, a regiment which was only recently again specially mentioned as having done such exceptionally good work. To most of you gentlemen who are present here to-day he was known personally. Conscientious, thorough and straight as a die in all he did, no matter whether it was in the office or on the cricket field or in any line of life, he won the affection and respect of all, and now he has laid down his life in fighting for those very principles which had moulded that whole splendid character. To many of us his death means more than the loss of a loyal and trusted colleague; it means the loss of a dear friend. To his parents I am sure you will wish me to convey our deepest sympathy, and may they find comfort in the knowledge that Gordon White will long be remembered as a standing example of a man for young South Africans, or for that matter any other youngster, to live up to—a gallant soldier, a gentleman, and the very best of sportsman.

It is a sad coincidence that yesterday Mr. G. H. Croote, jun., who sat in this room at our meetings with the late Captain Gordon White as his assistant, died from the prevailing epidemic. Mr. Croote was one of the most promising of the younger members of the Gold Fields' staff. He was anxious to go on active service, but failed to pass the medical examination. Having failed in that direction, he did his best by taking on work and helping in every way he could in the secretarial department in order that others who were medically fit could go on active service, only to die on the very day the sad news of his immediate chief's death is received. He will also be sadly missed by the members of the staff of this office, and most sincerely do we sympathise with his wife and family in their sorrow.

In conclusion, I wish to record appreciation to Mr. C. D. Leslie, the consulting engineer; to Mr. O. P. Powell, the superintending engineer; also to Mr. C. H. Greathead, the manager, and his staff at the mine, who have all loyally co-operated in doing their utmost under abnormal difficulties. In addition to the above gentlemen, I would like to record the board's grateful thanks to Dr. A. H. Watt, the chief medical officer of the Gold Fields Group, for the untiring efforts of himself and his assistants in looking after the health of all our employees, and more particularly for the energetic and valuable work they have performed in connection with the present epidemic. They have all been working night and day, and it is due very largely to their exertions and activities not only during the present epidemic, but also to their constant attention to the health of the employees at all times, that we have not suffered to a greater extent than might otherwise have been the case.

I now beg formally to move the adoption of the report and accounts.

Mr. Smits seconded the motion, which was adopted unanimously.

Messrs. C. Hely-Hutchinson and W. S. Smits were re-elected directors, and Messrs. Douglas, Low and Co. and T. A. White were reappointed auditors.

SUB NIGEL.

The annual meeting of shareholders in the Sub-Nigel, Ltd., was held on Sept. 25 in the board room. Consolidated Goldfields Buildings. Mr. D. Christopherson, C.B.E., chairman of the company in moving the adoption of the report and directors, said:— From the income and expenditure account which is before you, it will be seen that for the year ended June 30th, 1918, the declared working profit, after allowing for expenditure on renewals and replacements of machinery, plant, etc., was £91,769, and that after adding sundry revenue and deducting charges in respect of miners' phthisis payments, special war expenditure, taxation, etc., there was left an amount of £74,468 to be carried to the appropriation account. Two dividends were declared during the year, namely, 7½ per cent. in December, 1917, and 6-2-3 per cent. in June last, absorbing in all £72,292. Turning now to the balance-sheet, it will be seen from the left hand side that the nominal capital stands at £775,000, namely 475,000 shares of £1 each fully paid, and 300,000 shares of £1 each, 5s. per share paid, equal to £75,000, or a total of £550,000, less, however, £64 15s. in respect of calls in arrear in London. Full particulars regarding the increase in the capital are set forth in the directors' report. Moreover, the remarks which I made at the last annual meeting, as well as the subsequent circulars which were issued to shareholders, as also the proceedings at the extraordinary general meetings of shareholders on January 31st and February 28th last, so fully explained everything, that there is no necessity for me to go into details again at this meeting. Gold in reserve is £12,463 as against £9,983 previously. The remaining items on that side of the balance-sheet do not call for any special notice. Taking the other side: Property remains the same, viz.: £168,520; shaft-sinking, development, expenditure on equipment of property, etc., and capital expenditure on uncompleted estimates total £310,099, as against £256,921, or an increase of £53,178, full details of which are given in the report. Payments in advance £10,613 compare with £5,082, the increase being due to advances on account of mechanical engineers' orders and native labour supply payments. Gold in transit and cash total £88,587 as against £69,653, the increase obviously being due to the additional new capital raised, and to the somewhat larger gold reserve carried. The other items do not call for comment.

The Issue of Shares.

As will be seen from the directors' report, the balance of working capital unexpended on capital account at June 30th was £71,716, of which £67,637 was locked up in stores, investments, payments in advance, etc., leaving a balance of £4,079. It will be recalled that in connection with the recent new issue of 300,000 shares of £1 each, 5s. per share has already been paid up and the balance is due as to 5s. per share on 4th January next and as to 10s. per

share on 5th January, 1920. The new capital subscribed this year was £75,000. In January next a further £75,000 will be paid up, and in January, 1920 a further £150,000 will be paid up, thus making the total of £300,000. As to the new work carried out, details will be found in the Manager's Report. Mr. C. D. Leslie, the consulting engineer, points out in his report that the new vertical shaft has been started (as a matter of fact it is down 505 feet at date), and that it is expected to reach the reef horizon early in the year 1920, but in view of only 1,850 feet still having to be sunk to reach the reef horizon we hope if no unforeseen difficulties arise, that this estimate will prove to be on the conservative side. The shaft will command the lower ground together with the contiguous area of the 500 mynpacht claims situated on the farm Grootfontein No. 152, which the company recently acquired. To turn again to the working operations for the year under review it will be seen from the Reports before you that the tonnage crushed was 115,780 tons, or an increase of 5,500 tons over the previous year (and 58,125 tons more than for the financial year ended 30th June, 1914). The declared revenue was 49s. 0.704d. per ton milled or 5s. 0.07d. per ton more than for the previous year, while working costs were 33s. 2.477d., or an increase of about 8d. per ton, and the working profit 15s. 10.227d., or an increase of 4s. 4.185d. per ton; in other words, the total declared working profit was £91,769, as against £63,431 for the previous year, in addition to which gold to the value of £2,479 was added to the reserve account. It is all the more gratifying to note that these results have been achieved in spite of the many disabilities due to the war and otherwise, for example you will note from the manager's report that comparing the prices of stores in June, 1918, 1914, there is an increase of 4s. per ton milled for June, 1918.

Ore Development.

Coming now to the important matter of ore development. You will observe from the Consulting Engineer's Report that the ore reserve fully developed at 30th June, 1918, is estimated at 387,000 mine tons of an average value of 10.3 dwts.—this compares with 359,000 tons of 10.4 dwts. at 30th June, 1917; in addition thereto the partially developed ore is estimated at 36,000 mine tons of an indicated value of 9.8 dwts. as compared with 31,000 tons of 9.4 dwts. at the end of the previous year. The "C" Incline Shaft was advanced a distance of 663 feet during the year, to the 18th level, upon which development will proceed shortly. Improved winding equipment has been installed which will considerably facilitate opening up the area served by this shaft. On Mr. Leslie's advice development has been extended eastwards from C Shaft and westwards from E Shaft beyond the confined course of previous development, in expectation that this may lead to fresh discovery of payable ore. The eastern development in D Shaft has been interrupted by a dyke about which further information is required. Mr. Leslie points out that in E Shaft the recent lower development values are less regular than usual, but you will notice he adds that this should not be regarded as a disquieting feature. The pay chutes in C Shaft have been found to extend further westwards than was indicated by previous development.

To sum up the immediate programme is as follows:—(a) To rapidly

extend development from prepared points in C and D Shafts, which development will concentrate towards the new vertical shaft now being sunk; and in course of this development to open up areas for working through this new shaft. (b) To extend development for opening up ground to be worked through our existing shafts.

As to when it will be advisable to increase the crushing capacity of the plant, this must be dependent on the rate of progress made. As you are aware, in this district the payable ore is found in rich chutes or patches, the intervening ore bodies being worthless. Large stretches of low grade ore which might be payable by extended crushing capacity and consequently lower working costs, do not occur. In the meantime it is satisfactory to be able to tell you that Mr. Leslie is satisfied that for the coming year there are good prospects of maintaining the present rate of profits, and that he has no fears but that development work as it proceeds will open up fresh points for attack, but shareholders must bear in mind, when reading the quarterly reports in connection with development work, that during the current year this work is likely to include a large footage either off or under the reef or on reef between pay chutes. This obviously cannot be avoided.

High Rate of Dividends.

I have already mentioned that during the past year we declared 14-1-6th per cent. in dividends. Having the money available, and also having sufficient funds for carrying out the programme of capital expenditure sanctioned for the current year, and seeing that increasing profits were being secured, it was found possible to pay out these somewhat higher dividends than were anticipated at the beginning of this year. It is as yet too soon to make any definite forecast as to the amount of the next half-yearly dividend, especially in view of the serious effects of the deplorable influenza epidemic which is now in our midst. Although for a time the malady had acute effects at the mine (so far three whites and 21 natives having died), yet our engineer hopes that profits for this month will not be seriously reduced. On the other hand, if the epidemic seriously spreads to the native territories it may for a time reduce the number of boys coming forward for work. A number of the company's white employees are still away either on active military or on munition work. The amount paid out by the company on account of these men, including grants to the dependents thereof, was £2,020 during the year under review, while the total amount paid out in this connection from 1st August, 1914, to 30th June, 1918, has been £6,090. Altogether the number of the company's white employees who have left for active service, etc., since the beginning of the war has been 73, of whom four left during the past year. I am sorry to say that since the last annual meeting we have received advice of the following further casualties:—C. A. R. barts, C. H. Noyce, and A. J. Forbes, killed; J. R. Clegg, wounded; and A. W. Duffy, prisoner. Our deep sympathy is extended to the relatives of the killed and to the wounded, whom we trust will quickly recover completely; also to the prisoner, whom we may hope will be released speedily. In conclusion, I would like to record our appreciation to the consulting engineer, to the superintending engineer, and to Mr. F. G. Dunning, your manager, and his staff, who have all worked hard and co-operated most loyally. We extend to them all our hearty congratulations on the excellent results

achieved during the past year. I now beg formally to move the adoption of the report and accounts.

The Chairman before he sat down said in regard to this month's profits later information showed there would be no reduction.

Mr. W. P. Fisher said he had much pleasure in seconding the adoption of the report and accounts. He was sure it must be gratifying to shareholders to listen to the highly interesting report of the chairman as to the present and future prospects of the mine. There were one or two salient features in the speech which he thought deserved consideration, notably first was the fact that although there had been an enormous rise in the price of stores and other expenditure due to the war the increase in working costs had been only 8d. per ton and the profit something over 4s. per ton better, which was particularly satisfactory. It was also pleasing to have noticed recently the advance in the monthly profits, which was an indication that things were going well on the mine. He had had a little feeling of anxiety in regard to the ore reserves, and he took the opportunity to mention the matter to the chairman, who kindly explained how it was that a good deal of the work which had been done during the current year had been of such a nature that did not enable them to block out ore in sufficient quantities to make it appear that there had been a large development. The advance in working costs all round on these fields had been something like 4s. per ton, and for a mine like theirs, which was particularly rich and which he hoped would continue to get richer, that might not be of such vital importance but for low grade mines it was a very serious matter. He congratulated the chairman and the board on the past year's work, and he knew the shareholders were highly pleased at the action of the board in giving shareholders an opportunity to subscribe for the fresh working capital. He was sure that when the new shaft reached the horizon of the reef and additional working faces were available the figures which had been given would be abundantly justified.

The motion was carried unanimously. The retiring directors, Messrs. W. S. Smits and P. Dreyfus were re-elected, and the auditors, Messrs. Roberts, Hays and Co., and Douglas, Low and Co., were re-appointed.

KNIGHTS DEEP, LTD.

Mr. Douglas Christopherson presided over the annual meeting of the Knights Deep, Ltd., held in the board room, Consolidated Goldfields Bldgs., on September 31, and in moving the adoption of the directors' report and balance-sheet, said that the working profit for the year ended July 31st, 1918, was £21,019, which was more than swallowed up by other expenses, for it would be seen that £23,950 was absorbed by Miners' Phtthisis payments, special expenditure due to war, taxation, interest, etc., so that after allowing for £6,143, sundry revenue, there remained the small sum of £3,212, which was carried to the appropriation account. The loan of £25,500 from the Consolidated Goldfields has, since the last meeting, been paid off, this being due almost entirely to the fact that during the year they had been able to release a

substantial amount of money hitherto locked up in stores and material. Furthermore, during the past year the company had reduced the investments from £13,580 to £4,917, chiefly by disposing of the shareholding in Breyten Collieries, Ltd., thus still further strengthening the cash position.

As to the operations for the past, as compared with the previous year, the tonnage milled decreased by 58,800 tons. The mine, which was a low grade mine, was dependent on putting through a large tonnage. Working revenue per ton was practically the same namely, 14s. 9d. 247d., a decrease of 53d. per ton. Working costs were, however, 14s. 4.825d., as compared with 13s. 3.080d., an increase of 1s. 1.745d. per ton; while the profit was 4.422d., as against 1s. 6.697d., or a decrease of 1s. 2.275d. per ton. Thus the total declared working profit was £21,019, as compared with £93,214 previously, or a drop of over £72,000. The average number of natives employed was 6,301 as against 5,932 in the preceding year, or an increase of 369 boys, but this increase was unfortunately more than counterbalanced by the shorter hours of work which prevailed as from January 1st, 1918, as the outcome of the agreement come to between the Chamber of Mines and the Labour Unions. In like manner with other companies the Knights Deep suffered considerably owing to the abnormal floods experienced during the last rainy season. Shareholders would doubtless have noticed from the published monthly returns in the press that the declared profits from working for the last three months of the past financial year were higher than for the previous months, viz: an average of £4,544 per month as compared with an average of £713 per month for the first nine months of the year. The manager said that these higher profits were the result of an improvement in the average grade which it was found possible to effect. For instance, the grade of ore going to the mill during the last three months to July 31st, 1918, was 3.932 dwts., 4.384 dwts. and 4.317 dwts. respectively as against 3.626 dwts. per ton for the first nine months of the year.

Government and Low Grade Mines.

Continuing, Mr. Christopherson said that it must be some time before there could be any material reduction in working costs after peace, and, therefore, it could be expected that the existence of low-grade mines would remain precarious. The Union Government, on the report of the Select Committee appointed to inquire into the position of low-grade mines, practically did nothing beyond laying that report on the table of the House, and did not even invite a discussion on same. So far from any relief being given it was rather the reverse, as subsequently the Government Railways raised their charges by means of "terminal additions": as a result the Witwatersrand gold mines would be burdened with an extra £115,000 per annum. Other local industries, such as sugar, tea, matches, explosives, boots, wines, etc., etc., were protected by the customs duties imposed on the imported articles. It might be said that these duties were introduced primarily for revenue purposes for the administration of the country. The effect thereof, however, was to

protect and encourage such local industries, and surely the local industry, as represented by the low-grade mines, was deserving of consideration, especially seeing that the livelihood of a large proportion of the community was derived therefrom, directly and indirectly, as well as a large proportion of the State revenue. For the farmer sending his produce throughout the Union and overseas, facilities were granted by way of cheap transit rates over the railways; in fact, in one way and another, something had been and was being done for practically all local industries. But for the Gold Mining Industry—the greatest local industry they had—not only had nothing been done to afford relief, but increasing burdens were constantly being put upon its shoulders by the Government and others.

In passing, Mr. Christopherson said that it would be of interest to shareholders to know that whilst for the year ended 31st July, 1914, it cost the company 16s. 6d. to produce a sovereign: for the year ended 31st July, 1918, it cost 19s. 6d., or an increase of 3s.

Since the close of the financial year their profits had fallen off. For instance—

Tons crushed. Working profit.

August . . .	86,400	£2,612
September . .	83,100	683

August included the value, viz., £1,833, of 440 fine ounces from reserve gold account, so that the actual working profit was only £779.

The operations for the above two months were considerably interfered with owing to falls of hanging wall in various stopes, the result of which affected the tonnage and grade unfavourably. Then, also, like all other mines, they had during the past few weeks sustained serious inconvenience and interruption to operations owing to the influenza epidemic, so far three whites and 19 natives having succumbed to the malady. They would therefore readily appreciate that latterly they had passed through a hard period, and the directors feared that the operations for the current month must result in a loss, especially seeing that for the first three weeks the tonnage milled was down some 10,000 tons as compared with the corresponding period of the previous month. It would be seen from the consulting engineer's report that the ore reserve fully developed at 31st July, 1918, was estimated at 1,671,000 mine tons of an average value of 4.43 dwts. (as compared with 2,301,000 tons of 4.4 dwts. at end of preceding year); in addition to which the partially developed ore was estimated at 83,000 tons of an indicated value of 5.03 dwts. (as compared with 37,000 tons of 4.32 dwts. previously). It would be obvious from what he had said that all concerned in the management of the mine had again been faced with very trying circumstances, and he felt sure that they would join with him in expressing appreciation of their efforts at securing profitable working in spite of the many disabilities imposed owing to war and other conditions.

Mr. Christopherson continued his remarks by referring to the employees of the company who had gone on active service, a number having made the supreme sacrifice.

The report and balance sheet were adopted.

The retiring directors, Messrs. W. S. Smits and C. Hely-Hutchinson, were re-elected, as were the auditors, Messrs. Douglas, Low and Co. and Chas. Stuart.

LACE PROPRIETARY MINES, LIMITED.

(INCORPORATED IN THE TRANSVAAL.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twelfth Ordinary General Meeting of Shareholders in the Lace Proprietary Mines, Limited, will be held in the Board Room, The Jeppe Arcade, Commissioner Street, Johannesburg, on FRIDAY, 22nd NOVEMBER, 1918, at 10 a.m., for the following business:

1. To receive and consider the Directors' and Auditors' Reports, with Balance Sheet, for the year ended 31st August, 1918.
2. To elect two Directors in the places of Messrs. J. Dale Lace and B. Southwell, who retire in accordance with the provisions of the Articles of Association, but are eligible, and offer themselves for re-election.
3. To appoint an Auditor for the ensuing year, and to fix remuneration for the last Audit.
4. To transact general business.

The Share Transfer Registers of the Company will be closed from 16th to 22nd November, 1918, both dates inclusive.

By Order of the Board of Directors,

O. F. BROTHERTON

(for the Witwatersrand Township, Estate and Finance Corporation, Limited, Secretaries).

Head Office:

The Jeppe Arcade, Johannesburg,
29th October, 1918.

The National Bank of South Africa, LIMITED.

INTERIM DIVIDEND.

NOTICE IS HEREBY GIVEN that an Interim Dividend at the rate of Six per cent. per annum has been declared for the half-year ended 30th September, 1918, being six shillings per share.

The Dividend will be payable on 26th November to all Shareholders registered in the Books of the Company at the close of business on Saturday, 16th November, 1918, and to holders of Coupon 40 attached to Share Warrants to Bearer.

The Transfer Books will be closed from 18th to 23rd November, 1918 (both days inclusive).

Dividend Warrants will be despatched to South African Registered Shareholders from Pretoria, and to European Shareholders from London Office on or about 26th November.

Holders of Share Warrants to Bearer are informed that Coupons may be deposited at any of the Bank's Branches, and will, upon verification by Head Office, be paid on or after 26th November, 1918.

By Order of the Board of Directors,

C. P. MATHEWS, Secretary.

Pretoria, 26th October, 1918

THE WOLHUTER GOLD MINES, LTD.

(Incorporated in the Transvaal.)

DECLARATION OF DIVIDEND No. 22.

A DIVIDEND of 2½ per cent. (Two and one-half per cent.), 6d. (Sixpence) per £1 share, has been declared by the Board for the period ending 31st October, 1918, payable to Shareholders registered in the Books of the Company at the close of business on the 31st October, 1918, and to holders of Coupon No. 22 attached to Share Warrants.

The Transfer Books will be closed from the 1st to the 7th November, 1918, both days inclusive.

If possible the Dividend will be paid early in December, 1918, but owing to the irregularity in the mail service it is impossible to state the actual date of payment. The Warrants, however, will be despatched to Shareholders as soon as possible after receipt of the final Transfer Returns from the London Office. Those despatched from the London Office to persons resident in the United Kingdom will be subject to a deduction of English Income Tax.

Coupon No. 22, attached to Share Warrants, will be payable on or after the 6th December, 1918, at the London Office of the Company. Coupons must be deposited FOUR CLEAR DAYS before being paid.

Coupons paid by the London Office, unless accompanied by Inland Revenue Declarations, will be subject to a deduction of English Income Tax.

By Order of the Board,

RAND MINES, LTD., Secretaries.

S. C. STEIL, Secretary.

Head Office: The Corner House,

Johannesburg, 22nd October, 1918.

THE RANDFONTEIN CENTRAL GOLD MINING COMPANY, LIMITED.

Mining Plant and Buildings for Sale.

The RANDFONTEIN CENTRAL GOLD MINING COMPANY, LIMITED, offer for Sale, by Private Treaty, a Large Quantity of MINING PLANT and BUILDINGS, including the following items:—

Two 100 Stamp MILLS, falling weight of Stamps about 1,100 lbs.

One 22ft. x 5ft. 6in. TUBE MILL.

Four 22ft. x 5ft TUBE MILLS.

Two 65ft. Diameter STEEL TAILINGS WHEELS.

Seven STEEL EXTRACTOR BOXES.

Twenty-one WOODEN EXTRACTOR BOXES.

One 30ft. SORTING TABLE.

Two No. 6 GATES CRUSHERS and SPARE PARTS.

Four MECHANICAL HAULAGE GEARS.

Two BETTY ZINC LATHES.

One JOHNSON FILTER PRESS.

One FRASER and CHALMERS Horizontal Cross Compound MILL ENGINE, about 250 I.H.P., with CONDENSING PLANT.

One MUSGRAVE Triple Expansion MILL ENGINE, about 450 I.H.P.

One Cross Compound VERTICAL ENGINE, about 125 I.H.P., by Davey, Paxman and Company.

One LANE and BODLEY VERTICAL COMPOUND ENGINE, about 75 I.H.P.

One A.C. 3-Phase GENERATOR SET, comprising Tandem Compound Horizontal Engine by Macintosh and Seymour, and G.E.C. Generator, 50 Volts, 90 Cycles, 150 K.W., 225 R.P.M.

Two EDISON HOPKINSON DYNAMOS, 120 volts, 120 amperes, 690 revs., by Mather and Platt, Limited.

About 2,000 feet of 1½in. Diameter MANILLA DRIVING ROPES.

Eighteen CENTRIFUGAL PUMPS, from 8in. to 2½in. Diameters.

One TANGYE 40 cwt. Double Purchase HAND WINCH.
Six AMALGAM BARRELS and Three AMALGAM PRESSES.

One Small DRILLING MACHINE, by London Bros.

Two TAILINGS WHEEL DRIVES and Belt Tighteners.

One KRUPP LIME GRINDING MACHINE.

WOOD and IRON BUILDINGS, SHAFTINGS, COLLARS, LINGS, BEARINGS, M.S. and C.I. PIPING VALVES, COCKS, FURNACES, CLEAN-UP PLANTS, WOODEN VATS, Etc., Etc.

Further particulars can be obtained from the Engineering Department, Johannesburg Consolidated Investment Company, Limited, Seventh Floor, Consolidated Building, Johannesburg, or from the Controller of Stores, The Randfontein Central Gold Mining Company, Limited, P.O. Box 2, Randfontein.

For JOHANNESBURG CONSOLIDATED INVESTMENT CO., LTD., Secretaries.

FRANK HALL.

Johannesburg, 24th September, 1918

THE SOUTH AFRICAN

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AND ENGINEERING RECORD.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal and Engineering Record* is: South Africa, 1d. All other parts, 1½d.

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Notes and News

The sale by Messrs. Fraser & Chalmers, Ltd., of their Erith works has been followed by the sale of their business in this country to **Fraser & Chalmers Changes.** Messrs. W. H. Haig and C. E. Rogers, who will carry it on under the name of Fraser & Chalmers (South Africa), Ltd. Mr. Haig is the well-known General Manager of the company in Johannesburg, and Mr. Rogers will be remembered as a former General Manager of the firm here, who afterwards became General Manager of the works at Erith. The business, name, goodwill and connection, including all the agencies, were taken over by the new control as from July 1 last, and the new company will be registered in this country, with its head office at Farrar Buildings, Johannesburg. Mr W. H. Haig will be Chairman and Managing Director, and the experienced staff and extensive organisation so long and so widely known in the mining, metallurgical and general engineering fields, will be maintained and augmented. The same progressive policy that has characterised the firm in the past will, doubtless, mark its future, and new branches will be founded in other South African centres, such as Capetown, Delagoa Bay, etc. We heartily congratulate the firm on its rebirth, under such excellent auspices, at such a propitious moment.

His many friends on the Rand welcomed back this week Captain Clem Webb, M.C., from his two years' active service in France. **Return of Capt. C. D. Webb.** Webb has been given two months' leave from his unit, the S.A.N.L.C., and he speaks highly of the value and discipline of that corps. Before the men under his command sailed, Field Marshal Haig sent a congratulatory message, worded in the highest terms, which was read to the men. Captain Webb's four sons, who hold commissions in different regiments, have so far escaped without serious mishap.

We are officially advised that on the 4th instant No. 1 Borehole intersected reef on shale contact at a depth of 2,551 feet. The analyses from **Southern Van Ryn Borehole No. 1.** a section of 7½ inches of the core gave the following results:—Top section: Character, hanging wall quartzite with some banket matter; width, 1½ ins.; value, trace. Middle section: Character, Banket; width, 1½ ins.; value, 2.5 dwts. Bottom section: Character, Banket; width, 2½ ins.; value, 2.7 dwts. Below contact: Character, shale; width, 1½ ins., value, 3.2 dwts. Total width, 7½ ins.; value 2.1 dwts. The reef resembles that of Sub-Nigel. The borehole was continued in shale for a distance of 50 feet below the reef.

The widespread nature of the demand of gold producers for assistance is emphasised by recent advices from Canada, which show that **The Gold Question in Canada.** mining interests in the Dominion have joined those of South Africa and the United States in urging upon their respective Governments, through a representative committee, the need for some mitigation of the conditions which during the war period have adversely affected the industry. In this connection mid-August Ottawa dispatches announced that Sir Thomas White, Minister of Finance, had requested the Canadian gold mining interests to submit a definite plan whereby Federal assistance might be made practicable. While the miners' memorandum had not been formulated at the time the mail left, the "Commercial and Financial Chronicle" understood that the chief terms would include removal of the Customs duty on gold-mining machinery and exemption from all war taxation by Governments and municipalities. With a fixed price for their product, the Canadian gold companies, in common with those in other British Possessions and the United States, have been obliged to reduce production or close down. Concerns which barely made their way in 1913 on low grade ore extraction are now earning nothing whatever on capital.

H.M. Trade Commissioner in South Africa has published a list showing the items of mining stores which have been standardised, and those of which standardisation is still under consideration by the Transvaal Chamber of Mines. The list is as follows:—Items completed and Standards issued: Battery shoes, battery dies, battery heads, battery stems, battery camshafts, battery screening, medium and fine, grizzly bars, skip wheels, rails. Items completed and now in print: Battery tappets, battery cams, battery keys and gibs, battery blanton wedge, screening (coarse), electric lamps. Items under consideration: Truck wheels and axles, fishplates and bolts for rails, piping, conveyor belts, filter cloths, pulley centres, conveyor idlers. Prints showing full details of the nine items in the above list for which standards have been issued are at the Department of Overseas Trade (Development and Intelligence) and may be consulted there.

* * * *

Reuter's Agency is officially informed that the following are the numbers and amounts of the applications received for the present issue of local registered stock from the 15th October, the date on which the lists were opened, up

to and including the 31st October: Applications through banks, receivers of revenue, and Treasury (cash)—4½ per cent. stock, 135, value £320,742; 5 per cent. stock 555, value £892,990; total 690, value £1,213,732. Applications through Post Offices for cash—4½ per cent. stock 3, £750; 5 per cent. stock 25, £10,545; total 28, £17,295. Applications by conversion of Treasury bills—4½ per cent. stock 11, £31,400; 5 per cent. stock 37, £413,300; total 48, £444,700. Total—4½ per cent. stock 149, £352,892; 5 per cent. stock 617, £1,322,835; and 766, £1,675,727. These figures represent only such applications as have reached the Treasury and Pretoria up to the 31st October. In view of the dislocation of business throughout the Union consequent upon the influenza epidemic, the above figures are regarded as eminently satisfactory.

* * * *

The Secretary writes:—"We shall be glad if you will be good enough to give publicity to the following cable which has been despatched to the London Office of this Company to-day, viz.: 'Directors, acting on the advice of

The Glencairn Closing Down.

Consulting Engineer, have decided to discontinue mining and milling operations forthwith. The position has now been reached when mining has become unprofitable. At the last annual meeting of shareholders the Chairman indicated that the cessation of mining operations was not far distant. Work will be now confined to treatment of accumulated slime, which will take about two or three years. It is expected that slime will be worked at a fair profit.'"

* * * *

A message from Washington, dated September 5th, says:—To conserve gold for monetary purposes and the more essential trades and arts, the War Industries Board has decided to limit the distribution of the metal to manufacturers of jewellery, dental and optical goods and other materials into which gold enters. One consideration which will tend to give manufacturing jewellers a bigger supply than otherwise is the fact that jewellery forms one of the best export commodities for equalising foreign exchange rates. It represents a maximum of price with perhaps a minimum of war value, and can be shipped in small bulk to countries which import little other American goods and where consequently the dollar in exchange rate is low.

* * * *

The intimation of the death of Lieut.-Colonel Charles Arthur Tremeer, D.S.O., as a result of a motor car accident last week-end, was received with deep regret by a wide circle of friends. Colonel Tremeer was Imperial Trade Correspondent for H.M. Board of Trade. He came to South Africa in 1875 for the Frontier Armed and Mounted Police, seeing service in the Gaika and Galeka wars under General Sir Evelyn Wood. In 1880 he commanded the Kingwilliams-town Artillery in the relief column to Umtata. In 1886 he

came to Johannesburg, being gazetted as retaining the rank of Major in the Colonial Volunteer Forces. In 1887 he organised the firm of Tremeer and Cumings, and in 1892 joined the staff of the Farrar-Anglo-French group of mines. For the part he took in the Reform Movement in 1895-6 he was sentenced to three years' imprisonment, and on the declaration of war in 1899 he joined Sir George Farrar at the Cape to assist in recruiting the South African Mounted Irregular Forces. In February, 1900, he received the appointment of Commandant of the Rosebank recruiting and training depot until appointed as Field Staff Officer for Colonial Forces on Lord Roberts's Staff, and subsequently Lord Kitchener's Staff. He returned to Capetown to organise fresh recruiting in the Cape Colony and Natal, and at this period also enlisted the Mines Defence Division. In 1901 he returned to Johannesburg, where he was appointed Officer Commanding the Eastern District of the Rand, being also selected as one of the Commissioners of the Military Compensation Court. For his valuable and unselfish services he was awarded the D.S.O. In the German South-West Campaign he was Lieut.-Colonel and D.A.Q.M.G. with General Sir Duncan Mackenzie's Central Force, and was afterwards with the Northern Force. Col. Tremeer enjoyed a wide popularity in Johannesburg and the funeral on Monday was attended by a representative gathering of all sections of the community.

* * * *

An extraordinary meeting of the Planet-Arcturus Gold Mines, Ltd., was recently held in London for the purpose of passing a resolution to lease the property to the Gold Fields Rhodesian Development

Company. The directors, in a circular, state that they have received an offer from the Gold Fields Rhodesian Development Company to lease this company's mines, with the object of resuming shaft sinking and development work and equipping these properties. The Gold Fields Rhodesian Development Company propose to continue shaft sinking, further development, etc., and to erect plant for the working of the properties, including the construction of a light railway to connect the mines with the Rhodesian railway system. It is proposed that the Gold Fields Rhodesian Development Company be given a lease of the properties at a nominal rental and that all receipts from ore crushed, after deduction of working expenses, be retained by that company in payment of the existing loan, which, with accrued interest to date, amounts to £113,921, and of such further expenditure as may be incurred under the proposed scheme. When the entire indebtedness has been repaid the lease will terminate and the properties will revert to this company, together with all machinery, plant, railway, etc., to be worked by it for the benefit of its shareholders.

* * * *

The report of the Victoria Falls and Transvaal Power Company for 1917 states that at the end of the year the issued share capital amounted to £3,000,000 and Debenture capital to £4,076,640, a further £147,900 of the Five per Cent. First Mortgage Debentures and £13,300 of the Five and a-Half per Cent. Second Mortgage Debentures having been drawn or purchased for redemption. The net earnings amounted to £836,301. After providing for interest and premium on Debentures, £236,273, and for depreciation and income-tax, etc., £337,262, there remains a net profit of £262,766; £72,425 was brought forward, making £335,191. The directors have transferred £50,000 to reserve fund, and after deducting dividends on Preference shares there is left £195,191. On 20th June last the directors declared a dividend of 5 per cent., less income-tax, on the Ordinary shares for the year, and as the Preference shares are entitled to share pro rata with the Ordinary shares in the surplus profits distributed until the former have received a total dividend of 10 per cent. for the year in respect of which the distribution is made, the directors also declared at the same time a further and final dividend of 4 per cent., less income-tax, on the Preference shares in respect of the year ended 31st December last. These dividends were paid on 8th July last, absorbing £97,500, leaving £97,691, which it is proposed to carry forward.

TOPICS OF THE WEEK.

PEACE AND THE LABOUR OUTLOOK.

THE recent recrudescence of labour troubles on the Rand is regarded by some people as symptomatic of what may follow the advent of peace. Prophecy is perilous in these days of quickly changing conditions, and we do not pretend to be able to read the future of the relations between employers and employed. We may, however, profitably examine the most authoritative opinions of others on the subject, such as the final report of the Whitely Committee just issued in England, in order to find if it contains any useful lessons capable of local application. The terms of reference to that Committee, it may be remembered, were to consider (1) what could be done to secure permanent improvement in industrial relations; and (2) to recommend means for the systematic review of industrial conditions affecting those relations, so that future improvement in conditions could be ensured. The final report confines its attention to indicating a ground plan upon which each industry is invited to build the fabric suited to its own conditions. It was preceded by four others, in the first of which the Committee recommended that joint industrial councils be established for each of the principal well-organised industries in order to advise upon matters affecting the welfare of the industry, labour by this means taking a definite and enlarged share in the discussion and settlement of industrial matters. While reaffirming its conviction of the urgency of the matter, the Committee expresses the opinion that there is pressing need that every organised industry should equip itself with a representative machinery capable of dealing with the large questions of common interest to employers and employed, arising in war time, during demobilisation, and in the period after the war. In its Fourth Report the Committee made recommendations on conciliation and arbitration. Relying in the main on the methods built up by agreement within the various industries, and looking to an expansion and improvement of these methods, resulting from the habit of dealing with common questions in joint council, it has limited its new proposals to the establishment of a small Standing Arbitration Council, on the lines of the present Committee on Production, to deal with cases where the parties have failed to come to an agreement under their ordinary procedure and wish to refer their differences to this Council. In this connection the Committee made suggestions for minimising the occurrence of conflicting awards and for securing an interchange of knowledge and experience between arbitrators. On the question of the adoption of a scheme of profit-sharing and co-partnership, the Committee has considered the evidence at present available, and felt bound to come to the conclusion that it does not justify any general recommendations being put forward. The report concludes—rather weakly, it seems to us—as follows:

Our recommendations have the effect of conferring upon the Joint Industrial Councils, and through them upon the several industries, a large measure of self-government. Many of the subjects which might perhaps have been suggested as forming objects of inquiry by the present Committee are matters which, in our opinion, can more usefully and profitably be considered by the joint organisations, composed as they are of those actually concerned in the various trades. Moreover, since our Committee was constituted two new Departments of State have been set up—namely, the Ministry of Labour and the Ministry of Reconstruction. The functions of these Departments and the activities of the various Advisory Committees which they have established will necessarily include the consideration of the relations between employers and employed and of the problems connected therewith, and the Departments will no doubt be better able (through and with the assistance of the Industrial Councils which we have recommended) to offer such advice and guidance as may be found necessary than the present Committee. It is clear, therefore, that if we were to undertake further inquiries there would be a considerable amount of overlapping, either with the work that is now being carried on by the Central Departments, or with the duties and functions of the Industrial Councils.

What may be regarded as expressing the extreme view of the Labour minority is conveyed in the following note appended to the report, signed: "J. R. Clynes, J. A. Hobson, A. Susan Lawrence, J. J. Mallon and Mona Wilson," as members of the Committee, desiring to render hearty support to the recommendations on Industrial Councils or Trade Boards, but while recognising the more amicable relations thus established between capital and

labour, the signatories express the view that a complete identity of interests cannot thus be effected, and "that such machinery cannot be expected to furnish a settlement for the more serious conflicts of interest involved in the working of an economic system primarily governed and directed by motives of private profit." This, of course, is all very well as a pious declaration of faith in the possibility of Utopia. It will not help much in the solution of the Labour problems after the war. Indeed, the final report of the Whitely Committee, representing the last word on the subject in England, is disappointingly barren in suggestions likely to be of any practical use in meeting Rand industrial difficulties.

Some little way across the old German border, thinly disguised in places by a superficial layer of limestone, the prospector, fostered by the pre-war German authorities, located gold in commercial quantity. A field, roughly measuring 200 miles by 100, with a number of claims pegged (some of which were being worked when the war broke out), the whole mining district being at an altitude of over 4,000 ft. above sea level, which but rarely knows a mild form of malaria—such is the auriferous country in which the Kilimafeza gold mines are situated, says the *African World*. Towards the end of 1913 Mr. Le Roux, the promoter and present manager of this enterprise, safaried through the area. With a previous experience of Transvaal and Rhodesian gold mining he did not take long to arrive at the opinion that the district gave ample promise of prosperous development. Options were acquired over the Kilimafeza properties and, on his return to Nairobi, the company which was registered in June, 1914, was successfully floated. In July of that year he was already back at work preparing for the erection of the necessary machinery and plant. On the outbreak of hostilities, instead of being made prisoner, he was fortunate enough to be turned out of G.E.A. The company's plant arrived at Mombasa too late to be sent up to the mine, and lay in storage during the period of the local campaign. At length, towards the end of 1917, permission having been granted to the company to recommence operations, the machinery was conveyed to Musoma on Lake Victoria, as the only practicable route for freighting all this heavy material to the mine. But even by this way, a distance of 110 miles, the transporting difficulties were colossal. There was merely the roughest of tracks through a fly-infested country, where the cattle died in wholesale fashion, and unceasing rains; but by April, 1918, crushing operations began, only to find that the supply of water now necessary was insufficient in consequence of the succeeding drought. Ordinarily at this time of the year the Oranji River—which flows past the company's holding—is a roaring torrent. Three weirs have, however, been thrown across the river capable of conserving 5,000,000 gallons of water, and the management anticipate no further troubles in this respect after the fall of the first rains. Arrangements to complete their cyanide plant have also been made. Nevertheless, as the result of 38 days of intermittent crushing by a reduced plant, gold to the value of Rs.18,000 has been extracted from 259 tons of ore; being well over an ounce to the ton, at a cost of production of 6 dwts. per ton. In other words, the company has made a profit at the mine of 16 dwts., or £3 3s. 6d., per ton of ore milled. This remarkable achievement has been produced by the unceasing energy of Mr. Le Roux and his able assistant, the company's engineer, Mr. H. R. Martin, the only white men working on the mine, together with two Indian fundis. So far the main reef has not been dealt with, and the present results have been obtained entirely from another lode that was developed subsequently to the formation of the company. In all seven reefs, each carrying good payable values, have been unearthed within the boundaries of the 250 acres odd, that comprise the grant; and indications go to prove that the ore gets richer in every case as it descends. The unnecessarily tortuous journey to and from the mine is also by way of being greatly curtailed, and a practicable route to Kijabe has been discovered. The company is now in negotiation with the authorities for permission to use this far straighter and shorter road.

THE OCTOBER GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of October:—

Company.	No of Stamps Running	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Prodt.	Estimated Working Costs per Ton.
Bantjes Cons. ...	90	3	18,150	5,560	£2,129	23/ 1·6
City Deep ...	A154	10	49,500	21,696	20,566	28/ 1·6
Cons. Main Reef	220	6	46,310	16,432	8,183	25/10·8
Crown Mines ...	660	26	147,000	48,604	31,484	23/ 2·5
Dur. Rood. Dp..	100	3	25,600	9,068	2,191	27/ 9·1
East Rand Prop.	600	23	113,000	31,021	11,080	21/ 0·0
Ferreira Deep ...	280	7	38,700	14,117	11,975	24/ 1·8
Geldenhuis Deep	300	7	48,100	13,615	1,419	22/11·4
Knight Central ..	120	3	23,750	7,044	2,016	22/11·7
Modder B. ...	B104	8	56,500	27,455	57,827	19/11·3
New Modder ...	c236	15	73,000	39,529	90,485	20/ 3·3
Nourse Mines ...	180	5	38,350	12,592	1,611	26/ 5·6
Robinson ...	180	6	36,800	9,447	1,329	20/ 7·5
Rosc Deep ...	300	7	49,300	12,965	5,374	19/ 8·3
Village Main R.	130	4	21,300	6,781	5,008	21/ 9·2
Wolluter ...	120	4	31,550	8,435	3,459	20/ 0·8
Village Deep ...	180	7	40,900	13,662	*670	28/ 1·3
Wit. Deep ...	200	5	28,730	8,265	*2,593	25/ 8·7

Tls. & averages 4154 149 886,540 306,288 252,873 23/ 0·5

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.

C Includes 56 Nissen stamps.

* Loss.

East Rand Proprietary Mines, Ltd.—Shareholders were notified last month of an accident in the Hercules shaft, which prevented the hauling of the tonnage broken in that section during the latter portion of September. This ore was milled during October, thereby increasing the tonnage milled at a small cost, with a consequent material reduction in average costs per ton for the past month, which were further decreased by a temporary curtailment of development footage in two sections of the mine in order to facilitate the commencement of stoping operations therein. The profit earned is just sufficient to meet standing charges, including the debenture service. The grade of ore now being mined shows signs of improvement, and it remains to be seen if this improvement in grade and the native labour position will enable the company to make the working profit required to meet the standing charges. The outlook regarding native labour is at present unsatisfactory, due to the prevailing epidemic which has interfered with the supply coming forward from the native territories.

Bantjes Consolidated Mines, Ltd.—Improved results due to continuation of cleaning up.

Village Deep, Ltd.—Reduced tonnage due to shortage of labour.

General Note.—Results of all companies affected by the disorganisation of white and native workmen due to the influenza epidemic.

The general note above does not apply to the East Rand Proprietary Mines, Ltd.

Transvaal G.M. Estates.

The following notification has been received from the head office of the Transvaal Gold Mining Estates:—Almost all the native employees have fled to their homes, and operations are entirely suspended. Owing to illness among the staff the publication of results for October of the Transvaal Gold Mining Estates will be considerably delayed.

Barnato Group.

The results of operations of the Barnato group for October are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	40,000	£50,301
Ginsberg ...	75	12,750	13,908
Glencairn ...	160	18,700	11,586
Government Areas ...	200	114,500	200,183
Langlaagte Estate ...	200	46,940	59,520
New Primrose ...	90	17,400	15,898
New Unified ...	60	12,100	12,221
Randfontein Central ...	600	140,000	159,457
Van Ryn Deep ...	90	47,750	98,505
Witwatersrand ...	215	34,000	37,714

Totals and averages ... 1790 484,140 £659,293

September totals ... 1790 507,690 £684,018

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ..	£40,415	20·208	£10,073
Ginsberg ...	12,312	19·314	1,692
Glencairn ...	12,339	13·197	*561
Government Areas ...	115,439	20·164	85,358
Langlaagte Estate ...	45,098	19·215	14,617
New Primrose ...	14,628	16·813	1,353
New Unified ...	9,976	16·488	2,286
Randfontein Central ...	159,374	22·767	1,002
Van Ryn Deep ...	49,140	20·582	50,130
Witwatersrand ...	34,003	20·002	4,738

Totals and averages ... £492,724 20·355 £170,688

September totals ... £487,259 19·195 £200,879

Monthly Gross Profit for 1918.—January, £190,628; February, £159,225; March, £136,496; April, £164,186; May, £179,975; June, £180,141; July, £188,103; August, £186,284; September, £200,879; October, £170,688.

Note.—Profits of all companies adversely affected by influenza epidemic, some of them seriously.

Consolidated Mines Selection Group.

The following are the results of operations for the month of October:—

	Stamps Working.	Tons Mill-d.	Working Costs per Ton Milled
Brakpan Mines ...	110	49,000	26/ 4·898
Springs Mines ...	80	35,450	23/10·578

Totals and averages ... 190 84,450 25/ 4·170

	Value of Gold declar-d.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines...	£82,424	33/ 7·709	£17,724	7/ 2·81
Springs Mines ...	74,078	41/ 9·514	31,748	17/10·936

Totals & averages £156,502 37/ 0·765 £49,472 11/ 8·595

Tonnage and profit seriously affected by Spanish influenza epidemic.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

Albu Group.

The October operations of the producing mines of this group were as follows:—

Company.	Stamps.	Tons Crushed.	Total Cost.
Aurora West	80	12,700	£14,824
Meyer and Charlton	75	12,141	16,460
New Goch	80	16,050	15,406
Roodepoort United	80	21,900	26,635
Van Ryn Estate	140	33,860	29,745
West Rand Consolidated ...	100	27,150	33,350

555 123,801 £136,420

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	23·35	£13,892	*£932
Meyer and Charlton	27·11	40,105	23,645
New Goch	19·20	14,031	*1,375
Roodepoort United	24·32	19,394	*7,241
Van Ryn Estate	17·57	35,892	6,147
West Rand Consolidated ...	24·56	31,098	*2,252

£154,412 £17,992

* Loss.

As foreshadowed in the notes appended to the September output returns, the influenza epidemic seriously affected the results of most of the mines of the group.

Aurora West.—Loss due to small tonnage consequent on effects of influenza.

New Goch.—Loss due to small tonnage and fall in grade.

Roodepoort United.—Increased loss due to small tonnage and fall in grade. Improvement in both directions is gradually taking place.

West Rand Consolidated.—Loss due to effects of influenza epidemic and necessity for closing Rand shaft temporarily owing to breakdown of pumping plant. Latter will also affect results for November.

Union Corporation.

Results of operations on the producing mines of this group for the month of October:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary	100	41,500	£62,699	30/ 3
Modder Deep Levels	70	42,100	86,786	41/ 3
Princess Estate	60	17,500	20,786	23/ 9

Totals 230 101,100 170,271 —

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£43,355	20/11	£19,344	9/ 4
Modder Deep Levels ...	36,667	17/ 5	50,119	23/10
Princess Estate	26,583	30/ 4	*5,797	6/ 7

Totals £106,605 — £63,666 —

* Loss.

Note.—The Princess Estate and G.M. Co., Ltd., suffered exceptionally severely from the outbreak of Spanish influenza. Practically without exception the whole of the staff and employees (including the manager) fell ill, while of the 2,494 native labourers 2,401 were affected, but fortunately only 7 succumbed. Work was, therefore, completely disorganised for the greater part of the month. Conditions are again normal.

City and Suburban.

The following are the details of the operations at the City and Suburban for October:—Tons milled, 19,053; gold recovered, 7,292 fine ozs.; loss, £163. The loss was due to disorganisation resulting from the influenza epidemic.

OBITUARY.**LIEUT. LESLIE IMROTH.**

The whole mining community will deeply sympathise with Mr. and Mrs. Gustav Imroth on the death of their son Leslie, aged 21 years, who passed away at the residence of his parents, on Thursday. Lieut. Imroth was wounded in Flanders in November, 1917, and was invalided out about three weeks ago. In spite of all medical skill he was, however, too severely wounded to recover. He was educated at King Edward School, Johannesburg, and afterwards proceeded to Westminster, England. In thus giving his only son in the cause of the Empire, Mr. Imroth is but following the example of so many other devoted fathers in this war. The funeral took place yesterday, with full military honours.

MR. T. E. GREEN.

It is with the deepest regret we have to record the death on October 31st of Mr. Thomas Edward Green, the Assistant Manager of Messrs. Hadfield's, Ltd., of 46-47 Cullinan Buildings, Johannesburg, the principal office for South Africa of the great steel founders and engineers in Sheffield. Mr. Green has been closely associated with the company for about twelve to thirteen years, part of which time he spent in India developing Hadfield's business. In that country he unfortunately contracted malarial fever in one of its most malignant forms and has more or less suffered from its effects ever since. Mr. Green came to this country close upon five years ago, and has worked most unceasingly and energetically during that time to develop Hadfield's interests. He was a most talented business man, and his loss will be severely felt by the manager and staff of their Johannesburg office. Mr. Green came from one of the most respected families at Wath-on-Dearne, near Sheffield. His parents predeceased him some years ago. At the moment two of his brothers are associated with the firm, one representing the firm in the Midland district. The funeral took place at the New Cemetery on Friday last amidst many manifestations of regret. The chief mourners were Messrs. E. A. Barkby, manager, and Mr. G. Holgate, representing the directors and management of Hadfield's, Ltd.; Mr. W. H. Haig and Mr. J. McCracken, representing Messrs. Fraser & Chalmers, Ltd.; Mr. L. H. Lavenstein, representing Lewis & Marks; Mr. G. S. Stowe, Mr. T. F. Roberts, Mr. Diver, representing Messrs. R. Hudson & Sons, Ltd.; Capt. Ridley, of the Mechanical Transport, Roberts Heights; Mr. P. A. Etellin, manager of the Carlton Hotel; Dr. Morgan Davies, Miss Gordon, Mrs. Goldsmith, Miss Leaman, Nurse Henry, Miss Bateman, Miss Lorraine, Mrs. Mollar, and a host of other friends. A large number of floral tributes were sent from the following:—His Brothers, the Directors and Management of Hadfield's, Ltd., Mr. E. A. Barkby, Mr. G. Holgate, Messrs. Fraser & Chalmers, Ltd., Mr. W. H. Haig, Mr. and Mrs. McCracken, Messrs. R. Hudson & Sons, Ltd., Capt. R. A. Ironside, Mr. C. I. Simpson, and Staff of Messrs. Hudson's, General Manager and Staff of the British Westinghouse E. & M. Co., Mr. T. E. Roberts, Mr. S. Marks, Mr. L. H. Lavenstein, Mr. P. A. Etellin, Mr. Hugh Le-May, Messrs. Strong & Moore, Mr. Joe Bell, Mr. F. Robinson, Dr. and Mrs. Morgan Davies, Mrs. Goldsmith, Miss Lorraine and Mrs. Mollar, Miss L. Bateman. Mr. Hobkirk, of 47 Bree Street, had the funeral arrangements in hand, and the Rev. Ernest Titcomb conducted the service at the graveside. At the request of the latter, Mr. Barkby gave an appropriate address.

THE CASE FOR A BOUNTY ON GOLD PRODUCTION.

A Reasoned Plea for an Adequate, Continued Bonus on a Per Ounce Basis.

FROM Mr. H. Strakosch, the well-known Managing Director in London of the Union Corporation (formerly A. Goertz & Co., Ltd.) we have received a valuable and interesting pamphlet on the much-debated gold question, entitled "The Value of Gold in our Economic System." The work is—with some slight modifications and additions—a reprint of a memorandum, dated 4th July, 1918, which Mr. Strakosch submitted for the consideration of the Committee appointed by the representatives of the gold producers of the Empire at their meeting of the 3rd July last, for the purpose of placing before the Government the position of gold production as affected by the war, and it is easily the best statement of the case for a bounty on gold production that we have seen. Mr. Strakosch is, of course, peculiarly well qualified to deal with the subject, from his position in the world of gold mining and finance, and he shows himself in this work a close student of banking, currency and international exchange questions. He begins by pointing to the progressive decrease in the gold output of the world, and of the British Empire. To us on this side, of course, the facts are only too familiar. What Mr. Strakosch has to say about meeting them interests us more. Under this head he says:

The question has been raised as to whether any and, if so, what measure of relief should be given to the gold mining industry. The answer must depend upon the view one holds as to the utility and value of gold to our economic system. If the view is held that gold is not necessary to that system, then mines unable to bear the stress of the situation have no more claim to relief than many industries which have suffered or gone out of existence owing to the war. The loss incurred by the owners merely forms a very small addition to the price we are paying for waging war to uphold liberty and justice in the world. If, on the other hand, it can be shown that gold is necessary to our economic system, then the question resolves itself into assessing its value to that system—as distinct from its price—and in devising a scheme which will most efficiently foster an increased production of gold.

Mr. Strakosch proceeds to prove that gold is essential to our economic system and does so with a wealth of detail and unanswerable array of facts, pieced together and hammered out into a consistent, irrefutable argument. From this he concludes as follows in favour of a bounty:

It can therefore be said with emphasis that there is the most urgent need for our currency reservoir to be filled as much as possible, and that the flow of gold into it should continue to be on as extensive a scale as possible for many years after the war. It is also clear that it will not be prudent for a number of years after the war to allow the flow of gold into foreign countries to be governed, as it was in pre-war days, by the laws of supply and demand, and that therefore the Government, either direct or through the Bank of England, should have control over the gold production in the Empire for a considerable period after the conclusion of peace. The granting of a bounty by the Imperial Government on every ounce of gold produced in the Empire on condition that it is sold to the Imperial Government suggests itself as the best means of stimulating the production of gold and placing its control in the hands of the Government. Let us now examine what kind of bounty would tend most powerfully to stimulate the production of gold. For this purpose it is appropriate to divide the gold mines into the following three classes: (1) Developed and equipped low-grade mines which have already shut down their operations or which are on the point of doing so owing to the increase of the cost of production. (2) Developed and equipped producing mines which have a sufficiently large percentage of high-grade ore to enable them to work these notwithstanding the increased costs. (3) Partially developed and partially equipped mines which, owing to the low-grade character of the ore developed in them, have been temporarily allowed to lie idle. If the granting of a bounty were to be confined to the mines under Class (1), i.e., the mines which either have shut down or are likely to shut down owing to the increased cost of production, the effect upon the whole gold production would not be to increase it but merely to retard its decline. If an increase in the gold production is aimed at, and in view of what has been said above regarding the needs of our currency and credit reservoir there can be little doubt about this being the right course, an increase can only be produced by stimulating production, not merely in the mines under Class (1), but under all three classes. The so-called rich mines are called rich, not because all the ore contained in them is of good grade, but because the percentage of high-grade ore is larger than in the poor mines. All three classes of mines—and especially those of the Central Rand—contain vast quantities of low-grade ores. The exploitation of these in the case of mines under Classes (2) and (3) will involve capital expenditure for additional development and milling equipment. It is obvious that such expendi-

ture will not be incurred if there is not a reasonable prospect of it flowing back with an adequate return in the shape of profits. A bounty, therefore, too closely circumscribed as regards its extent and duration, would not be conducive to capital expenditure being incurred. Such a bounty might, moreover, prove from its purely temporary character to be a curse in disguise, because the higher profits resulting would no doubt lead to greater demands from labour, the effects of which would probably remain long after the bounty was withdrawn. It seems, therefore, very doubtful whether a bounty extending over a short period would in the long run achieve the object to be aimed at.

A SEMI-PERMANENT BOUNTY.

To be of real use in properly stimulating the output of gold the bounty should, it is submitted, not only be of sufficient size and granted to all gold producers in the Empire, but should especially be of a semi-permanent character not limited to the region of the war period, but extending for say at least 10 to 15 years after the conclusion of peace. The erection of additional plant which will be necessary if the output of gold is desired to be increased can hardly be expected to be possible before the war is over, and it must be assumed that it will take a matter of from two to three years from that time to complete it; so that if the bounty were fixed for a period of ten years from the declaration of peace there would only be left some seven to eight years within which to recoup the capital expenditure incurred. To determine the size of the bounty, whether it is to be a fixed one or a variable one with a fixed minimum, and what the bounty proposed is likely to produce in the way of increasing the output of the Empire, are matters which will have to be closely investigated, but broadly speaking, the bounty should be adequate in amount so as to increase and not merely maintain the output of gold in the Empire.

OBJECTIONS AND ALTERNATIVES.

Those who object to the idea of a bounty because there is no precedent for it should recollect that this war is unprecedented, that the economic conditions created by it are unprecedented, and that already many things have happened on the economic field for which it will be difficult to find precedents. They should be reminded of the purchase by the Government of the Broken Hill zinc concentrates, of the support given to the dye industry, the granting by the Government of bounties to producers of wheat, potatoes, etc., and of the differentiation in rates of interest allowed on money deposited by people in this country and by foreigners. The question has been asked—Why not, in order to do without the word "bounty," raise the price of gold? The answer is that one of the most important attributes of gold is the fact that by common and tacit consent of the nations, its price is fixed. It is this attribute which fits it best to be a measure of value. If that idea were disturbed, gold would be robbed of one of its most valuable properties. The raising of the price of gold would, moreover, lead to utter confusion and no doubt to a rise in prices of all commodities, with the end result that, as working costs would increase in the same proportion as the price of gold was raised, the mines would be in the same position they are in to-day.

MINOR HELPS.

Additional relief to the gold mines of the Empire of a *minor* order might be provided by the establishment, at the great centres of gold production within the Empire, of Agencies for the purchase of gold at the same price as in London. At present, owing to the charges of freight, insurance, etc., the price of gold within the Empire may be said to decrease more or less according to the distance of the production point from London. The establishment of such Agencies authorised to purchase gold, would produce in present-day conditions a saving to the mines of the Rand of, roughly speaking, 32s. per cent., mainly in the matter of freight, insurance, etc. On the Rand output of gold of say £34,000,000 sterling, this would represent a saving of about £550,000 per annum.

SUMMARY.

Briefly recapitulating, if a bounty is considered to be advisable in the national interests, it should be framed on the following basis:—

- (1) It should apply to all producers in the British Empire.
- (2) It should be a bounty per ounce of gold produced.
- (3) It should be continued for 10 to 15 years after peace.
- (4) It should be adequate in amount so as to not only maintain but increase the Empire's output.
- (5) The Excess Profits Duty should be abolished as regards gold mines and gold mining dividends.
- (6) The gold should be paid for at Mint price at or close to the centres of production.
- (7) A bounty should only be adopted after consultation with the producers.

Space forbids us quoting the remainder of the paper, but enough has been given above to show that Mr. Strakosch has made out a case, the validity of which does not end with the war.

A REVIEW OF ECONOMIC PROGRESS IN SOUTH AFRICA.—I.

Points from the Annual Report of H.M. Trade Commissioner.

In his report for 1917 on the Trade of South Africa, Mr. W. G. Wickham, H.M. Trade Commissioner in South Africa, states that, from the point of view of industrial development, the year will be looked back to as the date when the whole question was first taken seriously as a national problem and not one to be left solely to provinces, towns, or individuals. The following are the chief points which make this year notable in respect of industry in the Union:—(1) The first census of industrial production; (2) the formation of a Federation of Industries in which are associated all the Provincial Manufacturers' Associations and the affiliation of this Federation to the British Empire Producers' Association; (3) the formation of the Industrial Development Company, Ltd., to provide the practical assistance in the form of funds for new industrial enterprise, this supplementing the investigation, supervision, and guidance provided by (4) the now thoroughly organised Industries Section of the Department of Mines and Industries with its advisory Council of Industry, Statistical Committee and Scientific Advisory Board; (5) the first publication of the official monthly *Journal of Industries*; and (6) the flotation of companies to establish vitally important primary industries, notably the production of iron.

DEVELOPMENT OF INDUSTRIES.

Besides the two companies which are erecting blast furnaces, the one at Pretoria and the other at Vereeniging, the following are among the more important new industries which have recently been, or are on the point of being, established in the Union:—Manufacture of: Carborundum; calcium carbide; alcohol motor fuel (in addition to methylated spirit and industrial alcohol from sugar-cane refuse); asbestos sheet and goods; casting shoes and dies for gold mine stamp battery (of steel from electric furnaces); paint and distemper from local materials; maize starch; lead shot (in addition to sheet and pipe already manufactured); sauces and condiments; stearine; sulphate of ammonia; polishes, shoe and floor; toys—chiefly teddy bears, dolls and wooden toys; wattle bark extract for tanning (an industry previously confined to Germany); it is claimed that valuable vegetable dyes are also obtainable from the same material; refining of arsenic, with the probable future addition of its most useful compounds; refining of antimony, pure and oxide; tin smelting; recovery of tin by detinning scrap; lead corroding for white and red lead; glass-bottle blowing (previously established but closed down); chicory, local cultivation and preparation; meat canning. (There is, apparently, at present no canning of ox and sheep tongues, but no doubt this will follow.)

PROPOSED INDUSTRIES.

The following are among industries proposed and likely to be established:—Acetone; condensed milk; paper; tartaric acid. Necessities, the manufacture of which, while not begun this year, is yet of recent date and is being expanded, are: Cocoa; oxygen; rope twine and packings; rubber goods (from raw rubber). In addition, salt is being refined from local salt pans. Carbonate of soda deposits, chrome ore, magnesite and mica are all being worked and may lead to further local industries, as also the local pyrites to the production of sulphur. The Industrial Development Company, Ltd., is an indication of confidence in the future. It indicates that there is no longer that hesitation and uncertainty which delayed industrial initiative in the first years of the war. This concern has not only been successfully launched but it has already taken a lead in financing some of the new and promising industries included in the list given above.

AGRICULTURE.

Although the year is notable for its industrial developments, agriculture has, nevertheless, been on a scale which in other years would possibly have aroused more comment.

Agriculture has had to make the best of one very serious deprivation. Basic slag has been practically unprocurable all the year, and superphosphates, which in the earlier part of the year could be purchased from Japan, were afterwards listed as prohibited exports in that country. Sulphate of ammonia, which is now being manufactured in Natal, is, apparently, not suited to South African soils and is being supplied to the sugar growers in the neighbouring island of Mauritius, supplies of this necessity from Europe having been shut off. Public attention and scientific research are alike concentrated on the possibility of making South Africa more independent of outside sources in respect of phosphatic manures. It is, no doubt, fully realised that if the present-day level of exports of grain and meat is maintained, and, as may be anticipated, increased, the need for phosphates to replace what is taken not only out of the soil but out of the country is going to increase enormously. Present-day consumption is far below that, for instance, of New Zealand. If the recent finds of rock phosphate prove reasonably rich it may be anticipated that the small local superphosphate industry will expand and that the manufacture of sulphuric acid in the Union will also be further developed.

MUNICIPAL DEVELOPMENT.

Capetown, after a long and animated debate, has been committed by the ratepayers to a definite scheme for providing an adequate supply of water. The choice lay between two alternatives, both at a considerable distance from the Cape Peninsula, the one providing a very much larger supply of rather better water, but the other, the Steenbras scheme, has been preferred as adequate and at the same time very much less costly and capable of being brought into operation in a much shorter time. That time will depend on the facilities allowed for shipping the pipes from England. The total cost allowed for is £850,000. Provision for the cost can be made as the money is needed. An outlay of nearly £250,000, in addition, is required for extending the electricity supply and for clearing away slums and building workmen's dwellings. The important Vaal River barrage project of the Rand Water Board is well under way so far as excavation of foundations for the barrage goes, but the carrying out of the scheme is delayed until the valves and sluice pumps and pipes are procurable. East London and Grahamstown have alike determined on water schemes which, when carried out, will relieve these towns from embarrassment and make possible further engineering development. In the case of electricity, normal expansion has had to stop, all the more important municipal generating stations being already fully loaded and some actually overloaded, and additional plant on order being unprocurable or, at least, delayed. The same consideration applies to the telephone service, for which new instruments are unobtainable. Copper cable has, of course, been on the list of prohibited exports from the United Kingdom for some time, and this fact has given the Japanese a chance of having their cable tested in use by the Post and Telegraph Department, mines and public bodies. The accumulation of overdue orders and of postponed development in regard to electricity, water supply, and sanitation will probably, by the time normal trade conditions are once more in sight, represent a very large amount of business. This is equally true of mining, since, while production is being pressed on, both development work and the opening up of new enterprises are being largely postponed.

MINING.

This industry, of all the industries of the country, has, so far as production is concerned, been most nearly normal. With the one exception of diamonds, practically all the mineral products have been not only in demand but necessities of the Empire in war time even more than in peace. Diamonds, though at the other extreme as regards being

war necessities, serve a very useful purpose as a commodity of maximum value with minimum bulk saleable to America to help the balance of trade. Except from the shareholders' point of view, no other very obvious national purpose is served, since, as indicated below, there was no surplus of labour to be absorbed. The production, on the other hand, of gold, coal, copper, tin, lead, chrome, etc., has been encouraged in every possible way. Even agriculture, owing to the dearth of fertilisers, can hardly be said to have fared so well in respect of facilities for obtaining necessary supplies, though, of course, both in respect of prices offered and freight facilities provided, everything possible has been done in that direction also. The past year has, however, witnessed changes in connection with mining which commercially amount to a revolution. These changes have been brought about, both in the case of coal and gold, in the interests of economy, that affecting coal being a matter of organisation for disposal of output, and that applying to gold being concerned solely with the purchase of supplies.

COAL.

The change relating to the coal industry consists in an agreement to group the output of the Natal coalfields by qualities. Against a contract for a specified coal, any other coal in the same quality group can be tendered. Previously to this pool, a steamer might be held up waiting for a specific coal for which trucks could not be supplied owing to the congestion of trucks in Durban waiting for steamers which had not yet arrived. This difficulty has now been obviated; and while no doubt the new arrangement—on which the mining companies and the Department of Railways and Harbours are to be congratulated—will produce the economy of trucks which was the primary consideration, there can equally be no doubt that it will also be found to be a great economy to the producing companies as reducing the wasteful expenditure on demurrage to a minimum and increasing the quantity of coal for which they can get transportation from their pits to the coast.

GOLD.

The change in the system of buying supplies for the gold mines is also nominally a temporary expedient due to war exigencies. The old system involved the stocking in the hands of merchants and manufacturers' agents of supplies of every class of goods required by mines, other than special machinery and apparatus of which the precise specification was not fixed and known beforehand. It involved, in addition, every mining company or, at the very least, every group of mines, carrying stocks of spares and supplies to a considerable value. Individually, no doubt, these deposits of goods did not amount to very much and did not seem extravagant reserves against requirements. In the aggregate, and particularly when swollen by the very natural anxiety both of mine engineers and storekeepers and of suppliers to be on the safe side in case of abnormal delay in replacements from overseas or even prohibition of export, the stocks held on the Witwatersrand amounted to a very large quantity and value. The certificate of indents by the Buyers' Committee, which had been in force since the early months of the war, had not involved any pooling of ideas as to what was necessary. It might, therefore, happen that every individual concerned might with perfect honesty and good faith be requisitioning stock of the same item at the same time; and, as a result, it did actually come about that in some lines the stocks on the mines and in merchants' hands far exceeded the needs of the Rand taken as a whole. The very large figures shown in balance sheets by company after company as representing stocks in hand, called particular attention to the absence of system and lack of economy involved; and, seeing that a large proportion of the goods in question were of a kind the shipment of which was only justified by the necessity of keeping the mines going, and that they were in inadequate supply in the United Kingdom for other war purposes, urgent representations seemed called for to bring about a modification of the system.

(To be continued.)

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of October of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs.	Total Profit
Simmer and Jack ...	320	7	49,900	13,254	£5,042
Robinson Deep	95	8	40,200	12,415	*5,967
Knights Deep ...	400	11	75,500	15,287	*7,334
Simmer Deep ...	220	10	44,500	10,908	*2,307
Jupiter ...	80	5	21,900	6,354	*1,077
Sub Nigel ...	30	2	9,950	5,695	7,517
Totals ...	1145	43	241,950	63,913	*£4,126

* Loss.

The sundry revenue included in the above total declared profit is as under: Simmer and Jack, £1,500; Knights Deep, £155; Simmer Deep, £562; Jupiter, £314; total, £2,531.

Gold Reserve.—Simmer and Jack, 2,050 ozs.; Sub Nigel, 3,231 ozs.; total, 5,281 ozs.

All the companies severely suffered on account of Spanish influenza.

Manicaland Gold Output.

The mineral output of the territory of the Companhia de Moçambique (Manicaland), for the month of September, 1918, was as follows:—Reef: Mill: Gold won (fine), 96 ozs. 7 dwts.; tons crushed, 458; value, £399 7s. 7d. Alluvial: Gold won (fine), 442 ozs. 2 dwts. 14 grs.; cubic metres dredged, 43,050; value, £1,833 3s. 6d. Copper: Copper declared, 18 tons; value, £1,800.



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ANNUAL REPORT OF THE NATIVE RECRUITING CORPORATION.

THE report of the Board of Management of the Native Recruiting Corporation, presented to members at the sixth ordinary general meeting on 28th October, reviewed the operations of the corporation during the period 1st July, 1917, to 30th June, 1918, in the following terms:—The number of natives recruited by the Corporation, including voluntary, local and contractors' natives, together with the natives received from the Witwatersrand Native Labour Association, during the twelve months ended 30th June, 1918, was 180,448, from the sources shown in the following table, and the number of natives transferred from one member to another was 681, giving a total of 181,129:—

	Recruited.	Voluntary.	Local.	Total.
1. BRITISH.				
Cape Province	41,865	35,045	11,794	88,704
Natal and Zululand ...	2,904	4,495	2,522	9,921
Swaziland	4,438	956	399	5,793
Transvaal	3,019	6,415	3,149	12,583
Bechuanaland and				
Beeb. Protectorate	1,979	480	479	2,938
Basutoland and O.F.S.	11,280	2,043	3,306	16,629
Others	8	309	426	743
2. PORTUGUESE.				
East Coast natives S.				
of Lat. 22° S. (re-				
cruited by W.N.L.A.)	27,151	8,989	6,997	43,137
	92,644	58,732	29,072	180,448
Natives transferred from one member to another				681
				Grand total 181,129

Note.—Voluntary natives are those who come direct from their homes to the mines. Local natives are those who transfer from one mine to another, or from other employ to that of mines.

DISTRIBUTION OF NATIVES.

The labour position of members at the 30th June, 1918, was as follows:—East Coast, south of latitude 22° S.: Number employed underground, 48,426; percentage of underground complement, 28.93. British South African natives: Number employed underground, 75,772; percentage of underground complement, 45.27. Others: Number employed underground, 1,200; percentage of underground complement, 72. Total: Number employed underground, 125,398; percentage of underground complement, 74.92. Total employed on surface, 32,737, equal to 76.66 per cent. of surface complement. Total, 158,135, equal to 75.27 per cent. of total complement. The corresponding figures at 30th June, 1917, are given below:—East Coast, south of latitude 22° S.: Number employed underground, 47,339; percentage of underground complement, 29.58. British South African natives: Number employed underground, 71,844; percentage of underground complement, 44.89. Others: Number employed underground, 1,389; percentage of underground complement, 86. Total: Number employed underground, 120,572; percentage of underground complement, 75.33. Total employed on surface, 31,728, equal to 74.11 per cent. of surface complement. Total: 152,300, equal to 75.08 per cent. of total complement. Complements: Underground, 30th June, 1918, 167,375; 30th June, 1917, 160,045. Surface, 30th June, 1918, 42,703; 30th June, 1917, 42,813. Total, 30th June, 1918, 210,078; 30th June, 1917, 202,858. The net wastage (i.e., natives taking their discharge, deserted, repatriated and died) during the twelve months under review was 174,277. The number of East Coast natives, including "specials," received from the Witwatersrand Native Labour Association during the twelve months ended 30th June, 1918, for distribution to members of the Corporation was 27,151, showing a decrease of 4,536 as against the number received during the year ended 30th June, 1917.

ACCOUNTS.

Liabilities: The registered capital of the Corporation consists of 2,500 shares of £1 each, of which 1,985 fully paid shares have been issued to members. Payments made by members on the basis of their total native labour complements amounted to £52,519 10s. at the 30th June, 1918, being 5s. per unit of complement, leaving 15s. per unit of complement uncalled at that date. Assets: Debtors, £43,587 15s. 10d. This consists chiefly of amounts owing by members for labour supplied and outstanding at 30th June, 1918, and of advances made to labour agents for recruiting purposes. Rebates to members: The amount of the rebate received during the year from the Witwatersrand Native Labour Association, Ltd., was £51,064 19s. 1d., and this was distributed to members, on the basis of fees paid by them, in reduction of the cost of labour supplied. The surplus of receipts and expenditure, amounting to £15,939 5s. 5d., has also been distributed, making a total refund to members of £67,004 4s. 6d. during the year.

MANAGEMENT AND STAFF.

The chairman and twenty-five members of the staff are on war service and are in receipt of the war allowances due to them in accordance with the scheme approved by the Chamber of Mines. Of these, twenty are serving in France and four in East Africa, while two hold appointments under the Admiralty. Private M. Tully, of the South African Infantry, formerly of the Maseru Office, has been killed in action. Corporal A. E. Shuttleworth was taken prisoner at Delville Wood but after a long term of imprisonment in Germany he has been exchanged and is now in England. Other members of the staff who have been wounded and who have recovered, or who are progressing towards recovery, are: Lieut. G. B. Persse, M.C., R.F.A., severely wounded; Lieut. V. C. Hales, Leicester Regiment, severely wounded; Lieut. G. S. Rogers, Honourable Artillery Co. (now R.A.F. Balloon Section), slightly wounded; Lieut. J. C. A. Hartdegen, K.A.R., slightly wounded; Lieut. G. O. Lovett, R.A.F., slightly wounded; Sergt. J. French, K.R.R., three times severely wounded, twice slightly wounded, shell-shock and gassed; Capt. H. McVeigh, S.A.I., was severely wounded and permanently injured by shell fire in France, and after prolonged treatment has recently been invalided out of the Army, and has resumed duty on the Corporation's staff. The Board desires to record its appreciation of the manner in which the Corporation's officials and staff have carried out their duties in the conduct of the Corporation's affairs, and to thank the Chamber of Mines, the Witwatersrand Native Labour Association, the Advisory Committee of Consulting Engineers and the Complements Committee for their valued co-operation. The various Government Departments of the Union and of the British Protectorates have been most helpful during the year, and the thanks of the Corporation are due particularly to the Native Affairs Department and to the Department of Public Health.

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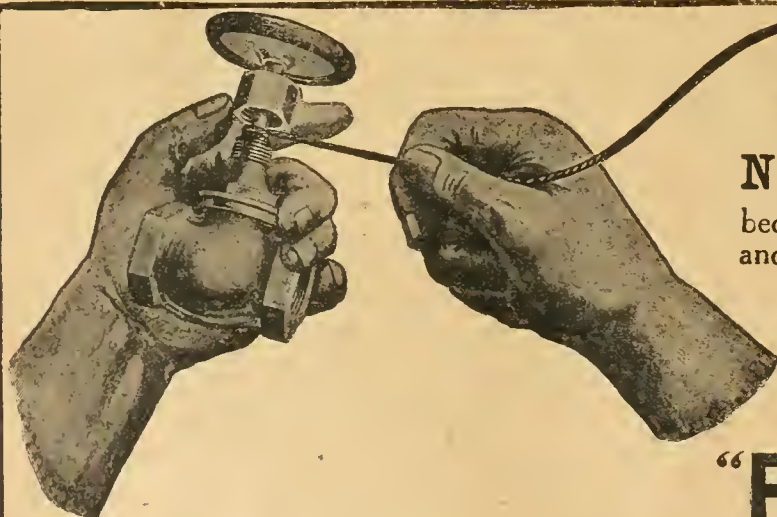
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INDUSTRIAL PROGRESS AND THE UNION RAILWAYS.

Annual Report and Review by the General Manager of the S.A.R.

THE report of the General Manager of Railways and Harbours for three months, January—March, 1917, and the year ended 31st March, 1918, gives the following figures for the twelve months ended 31st March, 1918:—

RAILWAYS.

Total capital expenditure at 31st March, 1918, £93,431,626; total earnings, £14,315,860; gross working expenditure, including depreciation, relaying, and strengthening, £10,817,669; surplus of earnings over gross working expenditure, £3,498,191; interest on capital, £3,216,525; net loss (after including miscellaneous receipts and charges) carried to revenue distribution account, £181,752; passengers carried, 51,178,883; goods, minerals, and coal, 13,936,502 tons; total open mileage of S.A.R. lines, 9,514 miles; total mileage operated by S.A.R., 11,450.

HARBOURS.

Total capital expenditure at 31st March, 1918, including lighthouses, £10,180,131; total earnings, £926,778; gross working expenditure, including depreciation, £456,945; surplus of earnings over gross working expenditure, £469,833; net profit (after paying interest, providing for expenditure on charges) carried to revenue distribution account, £105,486. Total tonnage of cargo handled (harbour tons), 4,681,532.

Dealing with the agricultural and industrial position during the 15 months preceding March 31st, the General Manager says: The period covered by this report has been remarkable for heavy crops and unprecedented prices for agricultural products. Local industries and manufactures have grown in number and variety, and developed in production. The steady advance in prices, the continued short-

age of freight, and the increasing difficulty of obtaining commodities hitherto imported, have stimulated local production, and led to a gratifying expansion in every direction. Considerable interest has also been created in, and in a small way steps have been taken to exploit, the immense field for enterprise in the working up of raw materials and the manufacture of by-products hitherto almost entirely neglected in South Africa.

THE IRON INDUSTRY.

An outstanding feature of interest is the new field of industrial development opened up by the commencement made recently with the smelting of iron ore at Pretoria and Vereeniging. The progress of the new industry will be watched with interest. Its potential value, its immense possibilities, and its far-reaching effects cannot be over-estimated. It is an industry essential to any aspiring manufacturing country, and especially to a country so far distant as South Africa is from iron and steel-producing centres. Once securely established, it will assure the permanent success of many budding and numerous subsidiary industries. It is understood that the progress already made is likely to lead to improved methods of making coke by which many by-products will be recovered. Referring to the influence of the war on South African conditions, Sir William Hoy says: In every way the appalling effects and ever-widening influences of the war are becoming intimately borne in upon the people of South Africa. Neither agriculturally, commercially, nor industrially has South Africa had reason to complain, and though minor and temporary inconveniences have inevitably resulted from war conditions, the Union has not only enjoyed complete freedom from anxiety with respect to the prime necessities of life, but may be said to have

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participated in a term of unexampled prosperity. Prices have been high, but, on the whole, money has been plentiful, and trade brisk. War expenditure on a considerable scale still augments the purchasing power of the community, and while it is perhaps adventurous to speculate as to the future, in view of the many accepted theories already overthrown, we should guard against being lulled into a false security. The present should be a time of conservation and development on a scientific and stable basis to meet the unknown conditions and the competition to be faced when peace is restored. The whole economic life of the Union has, of course, been influenced by the war. The shortage of ocean tonnage is likely to become more acute, and for that and other reasons imports will, no doubt, be further curtailed. The longer the war continues the greater will be the industrial and economic disturbance, and the more far-reaching the effects upon countries accustomed to rely on Europe either for markets or supplies. There is, however, a keen demand for many of the commodities which South Africa has for export, and this should ensure for it a reasonable share of the ocean freight available after war requirements have been met. There is also likely to be a world-wide shortage of many of our local products, and it is, therefore, reasonable to suppose that for some time at least South Africa's share in the world's trade need only be limited by her production. After several years of drought, the year 1917 will, in comparison, rank as one of abnormal rainfall, notwithstanding that the absence of seasonable rains affected farming operations in certain districts. Crops were good and grazing plentiful, and agricultural prospects have never been more encouraging. The Administration was largely freed from the constant anxiety and expense entailed by the repeated exhaustion of water supplies which has been a marked feature of recent years. However, the heavy rainfall brought its own difficulties.

RECORD FIGURES.

A steady and gratifying progress is reflected by the revenue and traffic returns, which show record figures under all the principal heads. The most striking advance is in passenger traffic, in which there has been a phenomenal increase, notwithstanding the withdrawal of excursion and concession tickets as from 2nd October, 1917. The number of passenger journeys increased by four and a quarter millions, and revenue from passengers by £318,210. Revenue from goods and mineral traffic increased by £217,283, a highly gratifying result when it is remembered that during the past 15 months restrictions on imports have been imposed with increasing severity, that a larger proportion of the available shipping has been required in the war zone, and that, in consequence, there has been a decrease of 67,535 tons, or 21 per cent. in the volume of high-rated commercial seaborne traffic carried to the competitive area. Increased local traffic has not only compensated for this loss but has expanded to such an extent as to reflect an increase of 248,977 tons in the gross tonnage of goods traffic handled as compared with the previous twelve months. The total revenue increased by £729,382, compared with the corresponding twelve months of the previous year, an increase of 5.37 per cent. In comparison with 1909—the year prior to Union—railway earnings have increased by £3,860,041, or 37 per cent.; passenger traffic by 22,987,748 passenger journeys, or 81.5 per cent.; goods and mineral traffic by 2,281,294 tons, or 61 per cent.; coal traffic by 2,719,742 tons, or 52 per cent.; and the volume of revenue-earning goods, mineral and coal traffic by 5,001,036 tons, or 56 per cent.

EXPORTS.

Sir William Hoy remarks on the question of exports: "Notwithstanding the world-wide shortage of mercantile shipping, caused by (1) the large percentage of shipping

tonnage which is being utilised for war purposes, and (2) the losses sustained by Allies and neutrals alike, under Germany's unrestricted submarine campaign, South Africa, so far, has had very little cause to complain. It is true that a lesser quantity of wool was exported in 1917 than during the years immediately preceding the war. 1913 was a record year for wool, and although, compared with that year, the tonnage shipped in 1917 decreased by 30,000, there was an increase of over £3,000,000 in the value of wool exported." Sir William Hoy lays stress on the difficulties experienced by the Railway Administration owing to the war, and he goes on to say: The difficulties induced by war conditions have been much intensified. While strenuous efforts have been made to minimise inconvenience, it has not been possible in South Africa, any more than in other countries, to maintain pre-war services and facilities. Traffic has been unsurpassed in volume, and services vital to the conduct of the war and the industrial and commercial life of the Union have had to be given preference. New equipment of all kinds is practically unobtainable to meet ordinary wear and tear, apart from providing for an enormously increased traffic, and it is becoming increasingly difficult to get the materials necessary to keep the present equipment in repair. Materials are becoming scarcer, and freight more difficult to secure. Substitute material of all descriptions have been devised, and various expedients—unthinkable in normal times—have had to be resorted to; but there is a limit to the extent to which deficiencies can be met in this way. Other countries are in the same position. In Great Britain the railways are complaining that they cannot get material, and they have appealed to the Government for assistance. In India the railways say that repairs cannot be postponed indefinitely without business activities suffering, and that it is necessary that some measures be taken if a breakdown is to be avoided.



ON GUARD.

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The Safety features of a "VULCAN" Safety Dog will never become undone.

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The features of the ordinary dog are improved in every respect—greater life, greater strength and quicker service in the "VULCAN" Safety Dog.

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SUGGESTED STIMULATION OF GOLD PRODUCTION.

Details of the Action in Western Australia.

THE Mining Association of Western Australia has, during the sitting of the Imperial Conference, cabled to the Chancellor of the Exchequer their views on the gold question. By a recent mail the president of that association, on behalf of the executive, forwarded a full statement in confirmation of the cable sent, and in amplification of the questions and proposed remedies as they apply peculiarly to this State. The executive have also sent copies of this letter to the Commonwealth and State Governments, in hopes of local interest being aroused. The letter is as follows:—

1. I have the honour most respectfully to confirm the cablegram sent to you on the 23rd of July by resolution of the Council of the Mining Association of Western Australia, and reading as follows:—"Mining Association of Western Australia urges upon Imperial Government vital importance of granting bonus of £1 per ounce on all gold produced within the Empire, also strongly recommends suspension of all taxation by Imperial and Dominions' Governments on gold mining; further, that greater security of tenure be assured to mining properties."

2. As a prelude to the reasons which actuated the despatch of this message, I may state that the Mining Association of Western Australia was formed to keep watch over the interests of all persons interested in mining in Western Australia, and to promote the welfare of the industry in all its branches. Through its Executive Council the Association has been actively engaged for some time in an endeavour to find a solution of the troubles with which gold mining, particularly, has been beset since the outbreak of war. These troubles are traceable to the following causes: (i.) Great diminution in the number of skilled miners available for carrying on the industry, owing to their patriotic response to the call of the Empire for men for the fighting line. (ii.) Diminished value of the men who are available owing to their inefficiency and inexperience. (iii.) Increased wages to the men engaged in the industry to compensate for the increased cost of living due to the war. (iv.) Greatly increased cost of essential stores and requisites for gold mining, notably explosives, steel, iron, cyanide, zinc, and chemicals. (v.) New and increased taxation upon the incomes of mine owners and companies engaged in the gold-mining industry, such taxation proceeding upon inequitable principles, as, for example, inadequate allowance for deduction of depreciation on plant and machinery and the wastage of capital incidental to mining; also insistence of the fallacy (for taxation purposes) that expenditure upon sinking shafts is capital outlay which must not under any circumstances be permitted as a deduction from taxable income. Against all of these adverse circumstances the Imperial Mints still pay but £3 17s. 10½d. per ounce of standard gold.

3. The Western Australian State and Commonwealth Governments have not, so far as this association is aware, taken any practical steps to alleviate the hardships which have been, and unfortunately still are, grievously pressing upon gold production in this State, the reason, so far as we are able to judge, being that the matter goes to the root of international finance, and that it is impossible, except through the instrumentality of the Imperial Government, to take any action which may even remotely become reflected in the standardised value of gold as denoted by the English sovereign.

4. Therefore, it was with feelings of great interest and relief that the council of this association learned through Press cables from London that you had convened a conference to examine the questions of increasing the production of gold within the Empire, and the steps to be taken to accomplish that desirable end.

5. In the cablegram which was sent to you in consequence of these reports, the Mining Association has respectfully submitted several suggestions which we believe will assist in the solution of what we fully recognise to be a very difficult problem. Although it may appear from our telegraphic message, which necessarily was brief owing to the exigencies of cabling, that our suggestions were placed before you as definite proposals, such must not be taken to be the case. Our views are that the more complete is the knowledge gained by the committee you have formed in London of the circumstances attending the production of gold in the outlying parts of the Empire, the easier it will become for those entrusted with the task to evolve a satisfactory solution of the difficulties.

6. I am directed to emphasise the fact that in advocating the importance of granting a bonus of £1 per ounce on gold produced within the Empire, this association is not actuated by any selfish motives. The proposal is advanced as the most readily applicable remedy for a situation calling for prompt action.

7. With reference to the questions of suspending taxation by the Imperial and oversea Dominions' Governments on incomes derived from gold mining, and the greater security of tenure under mining leases from the Crown, the council instructs me to state that it recognises these to be matters which can only be effectively dealt with by the respective Governments of the Dominions, but our object in drawing your attention to the subjects is to enlist sympathetic consideration of these important points by the Imperial Government, whereby, if possible, to obtain greater consideration from the Governments of the Dominions.

8. Since the year 1913 the gold production of this State has shown an alarming decline, which we regret having to inform you still continues month by month, and unless some means are speedily found to arrest the decline, the industry, which was one of the most important in this State, will become imperilled, thereby creating a grave injustice to the men who left the mines to fight abroad for the honour of the Empire.

9. The foregoing statement contains the reasons why the Mining Association of Western Australia cabled to you on the 23rd ultimo.

In conclusion, I am directed to state that the council will greatly appreciate any definite information you may be in a position to give us regarding this momentous question. Also, I have most respectfully to request you to be good enough to advise us of the decisions of the conference, which we understand you have convened.



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Purposes: For the purpose of Railway and Harbour and other Public Works in the Union, War Expenditure, and the repayment of advances from His Majesty's Government.

The Subscription Lists will be opened on the 15th October, 1918, and will be closed on the 30th November, 1918.

The Prospectus, together with Form of Application, giving full information, will be obtainable on the 8th October, 1918, from any Bank, Civil Commissioner, Receiver of Revenue, or Money Order and Savings Bank Office within the Union, and from the Treasury, Pretoria, or from the Sub-office of the Treasury, Capetown.

Period of Loan: Principal repayable at par on the 15th March, 1939, but the Government has the option to repay on or after the 15th March, 1929, on six months' notice having been given.

Interest will be payable half-yearly on the 15th March and 15th September. The first payment of interest will be made on the 15th March, 1919, and will represent interest on the deposit on application and subsequent instalments from the date of receipt thereof. Interest on instalments received subsequent to the 31st January, 1919, will be paid on 15th September, 1919.

Applications must be for not less than FIVE POUNDS, and may be for multiples of ONE POUND in excess of that amount.

Payment: Five per cent. or more, on application, and the balance on or before 30th June, 1919, in one or more instalments and on such date or dates as the subscriber may elect.

Union Treasury Bills are convertible into stock of this issue.

Transfers of the Stock, Free of Stamp Duty, will be effected by deed registered in the books of the Treasury at Pretoria.

Commission of five shillings per cent. will be paid to Banks, Brokers, and recognized Financial Agents in respect of applications (not involving conversion of Treasury Bills) made through them.

N.B.—Applications should not be made before the 15th October, 1918, nor after 30th November, 1918.

THE WEEK IN THE SHAREMARKET.

Unsatisfactory Condition During the Week—Slight Rally on Peace Rumours.

With victory in sight and the epidemic rapidly abating, the market continues to fall. At the call on Saturday, out of eleven sales only, which were recorded, five were for stocks under 10s. Government Areas, Springs and Modder Easts were all weaker. No business was done in the other Modder stocks. Monday's call brought no improvement in prices. Government Areas, Springs and the Modder stocks were all easier. The only important business put through was a large purchase of West Springs from 24s. 3d. to 24s. 6d. The market continued dull through the day, Government Areas falling to 90s. sales and sellers. Beyond an advance of 1s. in Southern Van Ryns and a slight hardening in Springs, the market showed no improvement on Tuesday morning. The Modder stocks were again weak and an eager seller of Modder East Options materially reduced the price of these shares. The market was again dull on Wednesday morning, and prices practically all lower. Later on there was a partial recovery, with sales of African Farms at 16s. 6d.; Leeuwpoots, 31s.; Randfonteins, 15s. 9d.; Government Areas, 90s. 6d.; Sub Nigels, 27s. 3d.; Modder Deeps, £7 6s.; New States, 20s.; Wit. Deeps, 13s. 3d., the latter on a report of improved values. On Thursday morning the overnight advances were maintained, though the Modderfontein stocks were again neglected. The outside business for the week was restricted, being limited to sales of Union Tins from 7s. 2d. to 7s.; Monteleos, 26s.; Makganyene Diamonds, 35s. Buyers and sellers: Henderson's Estates, 5s., 5s. 6d.; Options, 10d., buyer; Union Mica, 10s. 3d., buyer.

There was next to nothing doing at the opening on Friday. The call was dull and featureless with the following alterations:—Sales: African Farms, 17s.; Apex, 7s. 3d.; City Deeps, 52s.; Clydesdales, 21s.; Geduld Props, 37s.; Leeuwpoots, 31s.; Modder East three-year Options, 5s. 11d.; Rand Nucleus, 1s. 5d.; Southern Van Ryns, 12s. 9d.; Shebas, 1s.; Sub Nigels, 27s. 6d.; Springs, 69s. 3d.; Wolhuters, 3s. 3d.; Wit. Deeps, 13s. 3d. Buyers and sellers: Dagga Mines, 24s. 6d., buyer; Options, 5s. 3d., buyer; Modder Bs., £7 7s., £7 8s.; New State Areas, 20s. 3d., 20s. 6d.; Sub Nigels 5s. paid, 11s. 6d., buyer; Alkalis, 46s., 47s. 6d.; T.G.M. Estates, 14s., 14s. 6d.; Van Ryn Deeps, 70s. 6d., 71s.; Witbanks, 51s., 54s.

	Fri. 1st.	Sat. 2nd.	Mon. 4th.	Tues. 5th.	Wed. 6th.	Thurs. 7th.
African Farms...	15 1	16 0*	16 3+	16 0	16 0	16 9*
Anglo-Americans...	—	34 0+	—	—	—	34 0+
Apex Mines...	7 9+	7 6*	7 3*	7 3*	7 3*	7 3*
Banjos...	2 1	2 3	2 3	2 1	2 3	2 4*
Brakpans...	72 0*	71 6*	70 6*	70 6	70 6*	70 6*
Prey on Collieries...	10 0*	10 0*	10 0*	10 0*	10 0*	10 6*
Prick and Potteries...	—	3 9*	3 9*	3 9*	—	3 9*
British South Africa...	—	—	—	20 0+	—	—
Pu-hveld Tins...	0 7*	0 8	0 7*	0 8	0 7*	0 7*
Cassell Coals...	—	—	—	38 6*	40 0*	—
Cinderellas...	4 6*	—	4 6*	4 6*	4 6*	4 6*
City and Suburbans...	8 6+	8 0+	7 3*	7 0*	7 0*	8 0
City Deeps...	£2 0*	£2 0*	£2 6*	£2 0*	£2 6+	£2 0*
Cloverfields...	8 9*	—	—	—	—	—
Clydesdale Collieries...	21 0	21 6*	21 0*	21 0*	21 0	—
Concrete Construction...	5 3*	5 3*	—	5 0*	5 0*	5 0*
Cons. Investment...	20 0*	22 0+	20 0*	—	—	22 0
Cons. Langlaagte...	—	20 0+	—	—	—	20 0+
Cons. Main Reef...	12 0*	12 0*	12 0*	12 0*	12 3	12 0*
Cons. Mines Selection...	25 6*	—	26 0+	25 0*	25 0	25 0*
Coronation Freeholds...	1 0*	1 0*	1 0*	1 0*	1 0*	—
Crown Diamonds...	4 2*	4 0*	5 3*	—	4 0*	4 0*
Crown Mines Debs...	£100*	£100*	£100*	£100*	£100*	£100*
Daggafonteins...	23 6*	22 9*	22 9*	—	23 0*	24 0*
Do. Options...	4 9*	4 9*	4 9*	4 9*	4 9*	5 0*
East Rand Coals...	2 0*	2 0*	2 0*	2 0*	2 1*	2 1*
East Rand Deeps...	—	0 10*	1 0*	—	—	1 0+
East Rand Mining Estates...	17 0*	19 0+	17 6*	—	17 6*	—
East Rand Props...	4 6*	4 9*	4 9	4 6	4 0*	4 10
Eastern Gold Mines...	1 5*	1 5*	1 5*	1 5*	—	1 6
Frederia Deeps...	10 0*	10 0*	10 0*	—	—	—
Frank Smith Diamonds...	3 7*	3 7*	3 7*	3 8	3 9+	3 9
Geduld Props...	37 6*	37 2*	36 9*	35 9*	—	37 7*
Ginsburs...	—	2 0*	—	2 0*	—	—
Glencairns...	—	2 0+	1 9+	2 0+	1 3*	2 0+

*Buyers. †Sellers. A Odd lots. B Ex London.

	Fri. 1st.	Sat. 2nd.	Mon. 4th.	Tues. 5th.	Wed. 6th.	Thurs. 7th.
Glencoe Collieries...	—	6 0*	—	6 0*	—	6 9*
Glynn's Lydenburgs...	23 0*	23 0*	23 0*	22 6*	22 6*	23 0*
Government Areas...	92 0	91 6	90 9	90 0	89 6*	90 6*
Jhb. Board of Executors...	—	—	27 6*	27 6*	27 6*	—
Jupiters...	4 3*	4 3*	4 6	4 0*	4 0*	4 3*
Klerksdorp Props...	3 0*	3 0*	3 0*	3 0*	—	3 0*
Knight Centra's...	4 9*	4 9*	4 9	4 9	4 9*	5 1
Knights Deeps...	5 0*	—	—	5 0*	5 6*	6 0
Lace Props...	11 9*	11 7*	11 3	11 6*	11 6*	11 9
Leeuwpoot Tins...	29 3	29 3	29 0*	29 6	29 3*	30 6
Lu paa dsveis...	—	1 0*	—	—	—	—
Lydenburg Farms...	8 10	8 9*	8 8*	8 8*	8 8*	8 8
Main Reef West Debs...	£60*	—	—	—	—	—
Meyer and Charltons...	—	87 0*	—	—	87 0*	87 0*
Modder B's...	165 0+	160 0*	163 6+	158 0*	163 0+	—
Modder Deeps...	148 6	147 3*	145 0*	145 0	144 0*	145 6*
Modder Easts...	21 0	20 9	20 4½	—	20 3*	20 4½
Do. Options (3 years)	6 3	6 1	—	—	5 9*	5 6*
Do. Options (4 years)	7 3*	7 3	—	—	6 9*	—
Hume Pipes...	32 6*	32 6*	32 6*	32 0	31 0*	32 6*
Natal Navigation Colls...	19 0*	19 0*	19 0*	19 0*	20 0*	20 0*
National Banks...	282 6*	—	—	—	—	—
New Lok-burgs...	—	0 10*	—	—	—	0 10*
New Eland Diamonds...	23 0*	23 6*	—	—	23 0*	24 0*
New Era Cons...	10 1*	10 0*	10 0*	10 1*	10 0*	10 3+
New Geduld Deeps...	—	5 6*	—	5 7	5 7*	5 7*
New Herio's...	12 6*	12 6*	12 6*	12 6*	12 6*	13 0
New Kleinfonteins...	12 6*	12 9*	12 9	12 9	12 9+	12 9
New Modders...	540 0*	542 6*	532 6*	535 0*	540 0*	537 6
Nigels...	4 0*	—	—	4 3*	4 6*	4 6*
New Unifeds...	—	4 6*	—	—	—	—
Nourse Mines...	—	—	—	—	15 6*	—
Pr toria Cements...	70 0*	71 0	71 6	71 0	71 0*	70 0*
Princess Estates...	3 1*	3 2	3 1*	3 2*	3 1*	3 0*
Rand Collieries...	2 6*	—	3 6+	3 0*	3 3*	3 3*
Rand Nucleus...	1 5	1 5*	—	1 5*	1 5*	1 5*
Rand Selections...	84 0*	84 0*	—	83 0	82 6*	—
Randfontein Deeps...	—	5 9+	5 9+	5 0*	—	—
Randfontein Estates...	16 0*	—	16 0	15 9*	15 9*	15 6
Rooibergs...	10 3*	10 3*	10 3*	10 3*	10 3*	10 0*
Rooidepoort Uniteds...	3 6*	3 6*	3 6*	4 6+	—	—
Ryan Nigels...	3 0*	3 0*	3 0*	—	3 3	3 0*
Shebas...	—	—	—	1 0+	—	—
Simmer Deeps...	1 6*	1 6*	2 0+	2 0+	2 0+	—
S.A. Breweries...	—	31 6*	31 0*	—	31 0*	31 0
S.A. Lands...	6 4+	6 3*	6 2	6 3	6 3*	6 4*
Springs Mines...	69 9	69 0*	68 9*	69 6*	69 0	69 6
Sub Nigels...	27 3*	27 3*	27 0*	27 0*	26 9	27 3
Swailand Tins...	—	31 0+	—	—	31 6+	31 6*
Transvaal Lands...	—	20 6*	20 6*	21 0*	22 0*	22 6*
Transvaal C.M. Estates...	15 6+	14 9+	15 0+	14 0*	13 0*	13 6
Van Ryn Deeps...	70 6*	71 0*	70 0*	70 0*	70 3*	70 3
Village Deeps...	15 6*	—	—	—	—	—
West Springs...	24 3*	24 3	24 6	24 6	24 3	—
Welgedachts...	—	—	—	—	30 0+	—
Western Rand Estates...	—	—	—	—	2 3*	—
Witbank Collieries...	—	50 0*	50 0*	50 0*	50 0*	50 0*
Witwatersrands...	—	—	—	—	27 0+	—
Wit. Deeps...	11 3*	11 9+	—	11 3*	12 0	13 0*
Wolhuters...	3 0*	3 0*	3 0*	3 0	3 0*	3 0*
Zaaiplaats Tins...	16 3	16 0*	16 3	16 3	16 1*	16 2*
Union 5 per cents...	£102½	£102½*	£102½	£102½*	£102½*	£102½*
New State Areas...	19 6*	19 6*	19 6*	19 9*	19 10+	20 0
Southern Van Ryns...	13 0	12 6*	12 9*	13 9	13 9	13 0
S.A. Alkalis...	47 6	—	48 0	48 0	45 0	45 0*
De Beers Preferred...	375 0*	—	—	—	—	—
De Beers Deferred...	—	—	—	—	—	£15*

PERSONAL.

Lady Haig, wife of the Commander-in-Chief of the British Army, recently presented the prizes, including a silver cup given by her children, at the Whitehead Aircraft sports, Whitehead Park, Feltham. Mr. W. J. Cruddas (of the Union Corporation of Johannesburg), representing General W. Alexander (of the Air Ministry) proposed the vote of thanks.

The list of certificates issued by the Mines Department for the month ending 31st October, 1918, is as follows:—Mine Managers' Certificates (Metalliferous): H. Clarkson, E. W. Jenkin, F. Reim, E. L. Gay-Roberts, S. J. van der Spuy; (Coal): J. G. Howard, W. A. Moses. Mine Overseers' Certificates (Metalliferous): A. J. Gardner, M. D. Lundie, J. Morton, R. G. Scorey.

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THE MINING INDUSTRY OFFICIALLY REVIEWED.—VII.

Some Extracts from Annual Reports of Inspectors of Mines.

CAPE INSPECTORATE (G. E. B. FROOD).

Labour.—A great increase has taken place in numbers employed on mines, alluvial diggings, and works, the average whites and coloured respectively having risen from 3,073 and 19,784 in 1916 to 3,705 and 25,756 this year. This has been due entirely to the increase of operations in connection with the diamond mines at Kimberley. Restricting consideration to the year under review, its progress has not been marked by any appreciable change except as regards white employees on mines, works, and alluvial diamond diggings, whose numbers have risen from 3,338 in January to 3,656 in December. There is still a great deficiency of skilled white labour, especially mechanics, and mining operations have been a good deal hampered in consequence. Although we are still about 26 per cent. short, both as regards whites and coloured, of the numbers employed on mines at the end of 1913, there are signs of corresponding depression, but, on the contrary, things are apparently nearly as prosperous as ever. For this, apart from the consideration that a large proportion of the absentees are still on military service and in receipt of military pay, much indebtedness has to be acknowledged to the liberality of the De Beers Company, which in the first three years of the war had spent no less than £178,614 in supplementing military pay alone. The company has, in addition, since the start of the year been allowing a war bonus of £2 per month to all employees, irrespective of position and whether at work or on active service.

Coloured Labour.—The supply of this labour has proved, as usual, ample for all requirements. The observation in the De Beers Company's last report to the effect that the native labour required by the company was practically supplied by natives voluntarily presenting themselves at the compounds is rather pregnant in suggestion in view of the shortness of such labour elsewhere. The same position has existed at Jagersfontein and Koffyfontein in the Free State and may thus be taken as applying generally to the diamond mines. If it can be shown that these mines are paying more for their coloured labourers, whether directly or indirectly, than are the gold mines, in proportion to work accomplished, the significance of the comparison is lost. So also will it be if it can be shown that the possibility of contracting phthisis acts as a real deterrent to the native seeking employment on the Rand. If other causes are to seek, however, some investigation is surely called for, especially in view of the fact that the compound system as followed out on the diamond mines works so distinctly in favour of both the moral and physical welfare of the native labourer.

Accidents.—The results of a classification of accidents, according to the nature of the injuries received, entirely confirm the remarks contained in my last year's report as to the extraordinary preponderance in this inspectorate of accidents of comparatively slight or even trivial character. Thus, it will be found that, this year there have been no less than 93 accidents affecting fingers or toes only—few of which actually have been of much consequence and none dangerous. Out of the 214 accidents reported, 116, or well over the half, are classified under the headings of "Machinery" and "Trucks and Tramways." That, where such enormous quantities of ground have to be handled and hehanded, and conveyed over such tremendous distances in the aggregate, a certain number of accidents must occur, is inevitable. Whether, however, in view of all the circumstances, the present figure is to be regarded as excessive or otherwise, it is scarcely possible to say. All that need be stated is that the question of possible reduction has been receiving careful attention, and that various expedients have been, and are now, under trial with a view to minimising the dangers inherent to such work. I should like to point out, in view of the large number of blasting certificates issued to coloured persons employed on asbestos mines, that there has been only one slight accident on these mines in connection with explosives during the last three years, which fact appears to afford ample justification for the course that has been adopted.

Machinery.—I am glad to be able to report that the portions of the Cape Province worked by the inspectors stationed at Capetown and Kimberley have now been completely covered. The remaining portion, which is worked from Port Elizabeth, is still somewhat behind hand, but it is hoped that another year may see this district completed also. It is only after a district has thus been completely covered that a routine of orderly inspection can be entered upon with a free mind, and that an inspector can feel he has got the machinery under really satisfactory control. The accomplishment of this purpose has taken nearly six years of strenuous work so far, and it is very satisfactory to know that it is now so near completion. I should add that, to this result, the utilisation of the motor-car has been an all-important factor, and has been more than justified economically by the end achieved.

Asbestos.—2,999 tons, valued at £49,485, have been shipped this year, as compared with 4,228 tons, valued at £74,293 last year. The average price for this year works out at £16 10s. per ton, as against £17 11s. 5d. last year. The above results are to be regarded as distinctly disappointing. Last year the output more than doubled that of 1915, but this year there is a fall of 29 per cent. on the figure for 1916. At the same time though there has been a big rise in European prices, the costs of realisation have so increased that the net results to producers would appear to be, on the whole, distinctly to the bad.

There appears to have been an excellent demand generally throughout the year, but it has been intermittent to some extent, and the latter fact may have militated in some measure against export. When good orders have been available then, either because of shortness of freight or difficulties with regard to labour, there has been a failure to ship in time. When plenty of fibre has been available, then there have been either no ships or no orders. But whilst shortness of freight has been generally alleged as the chief impediment, it is difficult to accept this as a complete explanation, in view of the fact that Rhodesia, which is dependent on the same shipping as the Union, has been able to increase her output to an average production of 848 tons for the first nine months of 1917, as against an average for the whole of last year of 513 tons. Whatever the true reasons may be, the internal condition of the industry in the Cape can scarcely be regarded as one making for progress. The Cape Asbestos Company, which controls half the output, being long established and having its own factories and customers, no doubt finds it can progress best independently. As for the other producers, there is so far an entire want of the combination that might conduce alike to better local arrangements and to pushing "blue" asbestos in the European and other markets. At the same time, though it may be true, as claimed, that the intrinsic merits of the blue variety are superior to any other, it can well be imagined that this is scarcely the time when European buyers are likely to be making fine discriminations. On the contrary, the special troubles attending reduction and manufacture of this fibre are likely to be found a special obstacle at such a time as the present. At any rate, it does not appear that European buyers are yet calling out for this asbestos in particular or, except for very special purposes, beyond any other, and meantime, for those already alluded to or other reasons, the production of the raw material languishes.

Coal.—During the year such coal industry as we had in the Cape has practically fizzled out, the whole output for the twelve months having amounted to only 8,300 tons. By the shutting down of Indwe, which took place in the end of February, a landmark of some consequence in the history of coal mining in South Africa has been removed. Incorporated in 1894, the company passed through a halcyon period when it was playing the chief part in supplying the diamond fields with fuel; but, with the opening up of the country and increasing competition, the poor quality of its coal proved a crippling handicap. The last straw was the withdrawal of the railway contracts, on which for a long time past the mine has been mainly dependent. The practical stoppage of the coal industry in the Cape is purely in consequence of the operations of the laws of supply and demand. The competition of other fields has ruined the local industry; but, except for the little difference made to the trade of the district, there is no great harm done.

Copper.—The shipments for the year amounted to 10,525 tons valued at £550,642, showing a decrease compared with the previous year's output of 74 tons, but an increase in value of £76,566. The Cape Copper Company and the Namaqua Copper Company have continued operations during the year. These companies have been accustomed to draw their supplies from England, and shipping difficulties have been proving a considerable handicap on operations. This applies particularly to coke, the Natal product not having proved a satisfactory substitute for English. On the other hand, the improving price of copper has been more than sufficient to make up for all deficiencies, and the net results are to the good. A small contribution to the output was made by the New Areachap Copper Company, which for a time was sending some picked surface ore to the Messina in the Transvaal and the Falcon Mine in Rhodesia to be smelted. Latterly,

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this ore was being picked up to 17 per cent. Cu., and values were realisable at the latter mine at a cost of £9 7s. 7d. per ton, or at a profit of about £12 per ton. The experiment was interesting and was no doubt justified in view of the very high price ruling for copper and in absence of any facilities for treatment of the ore locally, but a definite limit was imposed by the inability to realise the values in the accumulating "seconds" or lower grade ore left after picking. In the meantime, also, the company had failed to find a market for its iron pyrites, of which it has a large body, with the result that all operations had to be suspended towards the end of the year. A visit of inspection was paid during the year to the Namaqualand mines and proved most interesting. At one time and for a considerable period these were amongst the richest copper mines in the world, but it is to be feared that the days of high grade ore have now passed away for ever. A little rich stone still continues to be put out from the O'okiep Mine, but even that is beginning to tail off in value. For the rest, only medium and low-grade ore now remains in sight in the mines still held by the companies, and prospecting operations in the country outside have not hitherto disclosed any fresh ore deposits. For the present, the very high price of copper naturally gives a favourable aspect to results, but in ordinary course the day will soon come when most careful stock will have to be taken of the lower grade ores still remaining. There are still fairly large reserves of 4 and 5 per cent. ore, especially at Nababeep (Cape Copper Company), but if either of these two great companies is to have a long life ahead it will only be through utilising more and more still lower grade stone, carrying 3 per cent. copper or even less, of which an enormous quantity will be available. Both companies employ the process of partial pyritic smelting for realising most of their values, a matter rather over 50 per cent. Cu. being exported to England. As a subsidiary process for realising by-products and other miscellaneous material, and by way of preparing these for the furnace, the Cape Copper Company employs a sintering process, and the Namaqua Company a briquetting process, both of which work very satisfactorily. The latter company, however, has also installed an Elmore plant for treatment of its poorer stone, and at the same time subjects its accumulations of tailings and old broken ground to a process of leaching with precipitation of the copper or old scrap iron. Fair success has been met with so far, and it is certain that it will only be by the utilisation of cheaper processes, of which these may be taken as representing the start, that any long life can be anticipated, for this mine or the field generally.

Tin.—38 tons of concentrates of a total declared value of £5,692 were shipped during the year. The output is still insignificant, but reflects an improvement on last year's figures of about 9 tons in quantity and 21 per cent. in value per ton. The Alluvial Tin Fields of Africa suffered such severe damage from the floods of the last rainy season that it was compelled to suspend operations in July. This company has been for a long time the chief mainstay of this struggling little industry in the Cape, and had latterly been making small but quite satisfactory profits. Its demise is the more regrettable, as, apart from having still some years of work with its alluvial ahead, there was always the prospect that it might ultimately develop into the jumping off place, so to speak, for a systematic attack on the tin lodes, up to which its alluvial deposits lead. The Good Hope Tin Mines, Ltd., having brought its mil. into operation, has been securing a small output, the results of which are stated to have been satisfactory. Latterly, some little development has been done on one of its lodes, but the financial position of the company has not admitted of much progress being accomplished. The past history of these lodes does not warrant any optimism, but a doubt certainly survives, and may possibly be warranted, that they have never had a really fair trial.

Gold.—Work is still persisted in on the Millwood Diggings, in the Knysna District, with the result of a small and quite inconsiderable return of gold.

Manganese.—Mr. Welsh's report on the manganese deposits of the Cape was published during the year and should have had the result of fixing with sufficient definiteness the prospects that may reasonably be entertained for these ores. Reports of one or two fresh discoveries have been received, but no developments of any consequence have resulted.

Phosphates.—The Saldanha Bay Phosphates Company has continued its output of finely crushed crude rock phosphate. The outlook for this industry has been admirably summed up by Dr. Du Toit in his Memoir (No. 10, Geological Survey) on these deposits recently issued. His estimate of the quantity of phosphatic rock available is distinctly reassuring. As regards the equally important point of the availability for fertilizing purposes of the material presently being milled, he regards the outlook as at least hopeful. There is some chance that phosphate in its more available form may be discovered in greater quantity, whilst as regards the remainder, composing the great bulk of the deposits so far opened up, in which the phosphoric

oxide is combined with alumina and iron, its insolubility under actual conditions of use should not be regarded as conclusively proved. The present position appears to be that, in view chiefly of the complexity of reactions that must take place in contact with the soil, people are far from being prepared to accept the fact of practical insolubility in a solution of ammonium citrate (the common test) as proving that the finely ground rock is practically useless as a fertilizer. No conclusion in any direction can be accepted, in fact, until after exhaustive trial, which must take some time, as the material is admittedly only slowly soluble. On this point, so important to the welfare of the country, an authoritative independent pronouncement must be awaited from the Department of Agriculture, but in the meantime reports by farmers of satisfactory results following on use of this crude phosphate continue to come to hand.

Nitrates.—There are no new developments to report, though interest is maintained and a lot of inquiries are made.

Diamonds: Mines.—The hauling of ground from Dutoitspan Mine was started on 7th May. Underground work had already been in operation for nearly twelve months at Bultfontein and Wesselton, so that all three of the chief De Beers Mines have been putting out ground actively for the best part of the year. Skilled white labour has still been scarce, but nevertheless it has been possible to undertake a good deal of development work in addition to the ordinary breaking of ground. In spite of rather unfavourable conditions, the costs have compared not unfavourably with pre-war rates. Except for some trial work at the Cyrus, Newlands, and Frank Smith, the outside mines were entirely quiescent during the year. The total output of diamonds from the mines (excluding debris washers) for the year was 1,556,777 carats, valued at £4,529,808. These figures indicate advances as against last year's figures of about 10 per cent. in weight of diamonds recovered and over 30 per cent. in gross value realised. The average value of the output per carat this year has been £2 18s. 2d., as compared with £2 8s. 4d. last year. Comparing the value of the output from mines only, as apart from debris washers and alluvial, for this year with that of 1913, the last complete year of production prior to the war, it will be found that we have been producing to the value of about 70 per cent. of what we did then. The increasing production and the much better prices realised, as indicated by the figures given above, bear ample testimony to the satisfactory condition of the diamond market. This, there can be little doubt, is largely due to the better control recently established, and the success thus secured, in face of such adverse conditions as now exist, provides the best promise possible for future stability.

Alluvial.—The output for the year is 84,737 carats of a total declared value of £567,807. This is a decrease on the figures for 1916, which showed 98,880 carats recovered of a declared value of £654,276. The average price realised per carat for the year is 134s., showing a slight improvement on last year's figure, which was 132s. 4d. Apart from the continuation of excellent prices for stones, the year has not been a very favourable one for the diggers. In particular, the state of the Vaal River has allowed of comparatively little work being done in its bed and results there have been generally disappointing. Several breakwaters were washed away before any reward could be reaped from their erection and all the toil and trouble involved. Some of these were on a large scale, erected by co-operative effort at considerable expense, and many of the diggers must have been rather hardly hit by this bad fortune. There have been complaints of shortness of ground during the year and various migrations to the Transvaal fields have taken place. The results from the Orange River have been distinctly disappointing. The Sanddrift outspan was proclaimed a public digging in February and attracted a big crowd of peggers, but soon after the start of work it became apparent that the payable ground on the farm was practically confined to the owner's and discoverer's claims. None of the other farms on the Cape side of the river was found to carry deposits of much value and no further ground was proclaimed. The total output from Sanddrift from proclamation to the end of this year was 3,198½ carats, valued at £20 607, but large values had been extracted previously during the prospecting stage.

Debris Washing.—The contribution to output from this source has been 9382½ carats, valued at £12,313.

(To be continued.)

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Peace Tension Stopping Business—Timber Trade—Shipping After the War—Absence of Speculation—Business Steadier, as Johannesburg Soon Forgets—Plate Glass Slightly Easier—Second-Hand Materials.

THE great tension over the peace news throughout the town on Wednesday had the effect of practically suspending business. What few prices were available did not disclose any further alarm, as the real jar occurred when Bulgaria surrendered and the subsequent events were taken more as a matter of course. The effects no doubt were felt at an important two days' sale of second-hand mining material and plant, as results were on the poor side. According to an expert dealer it was not altogether a bad sale considering the rumours flying about, as it was generally recognised that second-hand materials were not so strong and buoyant as compared with a few months ago. Two water tube boilers, practically new or very little used, had a bid of £400 each, which was accepted subject to confirmation. When new the price was about £1,000 each. Two vertical boilers realised £100 each, and these were said to be cheap at £150. Wire ropes went at 1s. 2d. for 1½ inch and ¾ inch at 1s. 1½d. per yard. A stone crusher, 9 x 12, with new jaws and spare parts, guaranteed in perfect order, was picked up dirt cheap at £60, simply as a spec. to sell again, as any second-hand dealer would ask £100 for a similar machine. A lot of hose pipes were passed without a bid, also a good many things were treated likewise. On the other hand, here and there a few things brought very decent prices, and considering all things the auctioneer did well—but he had an uphill job, through the disquieting rumours, etc.

THE TIMBER TRADE.

There are no alterations in prices, but there is a penny difference in deals at some yards. The exchange rate is still going in favour of London, as it is 17·27 Swedish kroners, thus making the English sovereign lose only about 1s. The shipments on the way now are at high values, but it is probable that those arriving in January may be favourably affected by the exchange. However, the exchange has only a little to do with values compared with the shipping freight. For example, before the war the freight for a standard of timber from Sweden to the Cape was only from 70s. to 80s., but now it is £27. The cost of the timber is about £27 and the marine and war risks about £2, making a total of some £56 as compared with £14 for a standard in pre-war days. It will be noticed that the freight question is far and away the most important one, and as there are various opinions the matter must have a paragraph all to itself.

SHIPPING AFTER THE WAR.

It will be noticed in the previous paragraph that freight for a standard of timber has since pre-war days increased sevenfold, viz., from £3½ to £4 to over £27. Suppose we have an armistice with Germany; that means a cessation of the submarine menace, therefore shipping could make more journeys. Then another consideration would be that the war and marine insurances would be less, as well as the financial exchanges making a nice little total, representing about a penny per foot less on the cost of landing deals. In the case of an armistice and peace there would be less shipping required between England and France, which also would enable trips to be made at once into the Mediterranean, which is now free of Austrian submarines. In the event of peace the immense tension will be taken off shipping in Britain and America which in itself would make a reduction in freight charges. That alone perhaps would not make much difference, but then comes the point as to what the British Government will do with the thousands of ships of all kinds now employed or under its control. It owns the biggest fleet in the world, therefore it is only reasonable to suppose they would immediately release a very large proportion of those hired and use their own boats to bring the troops, when ready, back from France, as well as using its own troopships for South Africa, Australia and Canada. In support of such an argument a lot of economy must be exercised by the British Chancellor to satisfy the men who are paying 10s. in the £ for super-income tax, as well as the ordinary ones paying 5s. and 6s. The same gentleman has also to provide many millions to pay interest on the war bonds and consols, to say nothing of military pensions and so forth. If the British Government utilises its own ships in a measure and with the present good outputs of British and American yards, as well as other places, it certainly should ease the present great stringency in shipping requirements; therefore it is not unreasonable to look for an immediate peace reduction of ten to fifteen per cent. in freights and another five in insurance charges. It is also well known that when once charges of any kind get on the down grade, a few units of percentages are all in the reckoning.

THE TREND OF BUSINESS.

The trend of business is difficult to gauge. However, if anything, prices are steadier generally, with occasional brokers offering lines a little less to encourage trading. For

example a small lot of paints, nearly a ton weight in different sized receptacles, was sold at 6d. per lb., just to clear for spot cash. Unfortunately, such a sale is exaggerated to perhaps so many tons, which obviously gives a wrong impression of the market, as perhaps one would not get another such line anywhere in town. As previously remarked, the damage to prices occurred after the Bulgarian debacle, and with a few exceptions they have steadied themselves since. In the oil and colour trade business pretty well resumed normal at the beginning of this week, when the 'flu was pronounced better, as Johannesburg so soon forgets, as one manager remarked. There is one marked feature, and that is the absence of speculation, and merchants are only purchasing from hand to mouth.

OILS, COLOURS AND GLASS.

The firm which usually issues a price list and trade circular will not issue one for November, because values are so uncertain and business so erratic. If peace happens, then a general circular will be issued anticipating the future, so that customers may act accordingly. The prices of this particular firm have not altered, although there is an easier tendency in plate glass, as fair supplies have recently been received; however, the sheet variety is not too plentiful, especially in the larger sizes. Bevelled mirrors are on the slack side, because the furniture trade was almost at a standstill owing to the influenza epidemic for a time, and Johannesburg is making pretty well all the mirrors required in the local furniture manufactories.

IRON AND STEEL TRADE.

There is no alteration in bar iron or mild steel, but business is a little better through enquiries from the country and reef. There is a little stuff on offer, viz., wire nails, dog spikes and shovels, at about current rates. Galvanised iron is a shade easier, being offered at 85s. per 100 lbs. at Durban f.o.r. People, however, hesitate about buying, only just to supply the orders on hand, as it is generally recognised that this is the top of the market, with peace apparently in sight. Many people have been expecting the war to last another twelve months or even two years, therefore they laid in stocks liberally and even now a philosophical view is taken of the position, because people holding every-day stocks are not fearing any bad consequences.

SECOND-HAND MATERIAL.

The price for the best second-hand deals is 1s. 6d. per foot and best roofing iron 1s. 6d. per foot. Business has been exceedingly quiet owing to the 'flu epidemic, but now there is a little more enquiry from the farmers, who are again visiting town. In second-hand mining material there is very little doing in town and less in the country, as people are awaiting peace events. The tendency in all second-hand goods is easier.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deale, Baltic, 9 x 3, 2s. to 2s. 1d.; flooring, 4½ x ¾ and 6 x ¾, 11½d. to 11½d. per sq. ft.; ceilings, 6 x ½, 7d. to 7½d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, ¾in. x 12in., 1s. 4d. per foot; 1in. x 12in., 1s. 8d.; teak, 25s. to 27s. 6d. per cubic foot; shelving, 1s. 3d.; Jarrah, 14s. 6d. cu. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 1s. 11d. to 2s. per ft.; beaver boards, 11d.; galvanised iron, 24-gauge, 6ft. to 10ft., 2s. to 2s. 1d.; 11ft., 2s. 2d.; 12ft., 2s. 3d.; 26-gauge, 6ft. to 8ft., 1s. 9d.; 9ft. and 10ft., 1s. 10d.; flat galvanised, 24 and 26-gauge, 95s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 50s.; and 3 ply, 55s. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s 2/4 1-5 galls.; 10-1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ¾in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4's;

petrol, 39s. 7d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 36s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11b.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 50s. to 55s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ½in. and 3-16in. round iron, 95s. to 100s.; ¾in. do., 85s.; ¾in. steel, round, 80s.; ½in. round iron, 85s.; do. steel, 72s. 6d.; ¾in. round iron, 72s. 6d.; do. steel, practically none in town; ¾in. round iron, 65s. to 67s. 6d.; ¾in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunswart local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ½in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 1s. 9d. lb.; ¾in. dia., 1s. 6d., 3½in. and up long 1s. 6d. lb.; ½in dia up to 2½in long, 77s. 6d. 100lb.; ¾in dia. and 2½in up long, 75s. per 100lb.; ¾in. diameter up to 2½in. long, 85s. per 100lb.; ¾in. dia. 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 55s. 100 lb.; ¾in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ¾in., 85s.; ¾in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ¾in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

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Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—VII.

Lessons for South Africa—The Electrification of the Italian Railways.

THE following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E.:

Apart from its value as an experimental field, the electrification of these Valtellina lines gave excellent economical results. It promoted, as is always the case, a very considerably increased traffic, which in 1914 already comprised 39 regular passenger trains daily, and 49 normal goods trains, in addition to optional supplementary traffic. The annual traffic for this year was 110,000,000 ton kilometres, with a power consumption, measured at the power station busbars, of 5,500,000 k.w. hours. This is equivalent to 80 watthours per ton mile, which might seem perhaps rather on the high side; on the other hand, it is at the power station busbars, and allowing for double transformation and line losses would probably be reduced to 68 to 70 watthours at the trolley. It has also to be remembered that the passenger traffic is considerable and the speeds relatively high—67 kilometres per hour—and consequently the consumption figure cannot properly be compared with that for a heavy freight line.

Some details of the passenger traffic are as follows:—On the 1·7 per cent. grade between Lecco and Sondria, one locomotive would haul a 370 ton train at 30 kilometres per hour, or a 240 ton train at 60 kilometres per hour. On the 2·2 per cent. grade between Colico and Chiavenna, these same locomotives would haul 180 tons at 30 kilometres per hour. Goods traffic is handled at 35 and 40 kilometres per hour, depending on the locomotive available. Energy is generated at the Morbegno power house, and distributed at 20,000 volts to the various transformer stations, where the voltage is reduced to 3,000 volts for the contact wires. The operating results show an economy of 12 per cent. in favour of electric traction, after full allowance is made for interest on capital outlay and depreciation. When it is remembered that the line was selected not because it was a particularly favourable field for electric traction, but because it embodied on a small scale all the difficulties that might be encountered in a general railway electrification, the result was certainly most satisfactory. Details of the three-phase locomotives supplied by Ganz & Co. for these lines are as follows:—

DATA ON VALTELLINA RAILWAY LOCOMOTIVES.

Locomotives ordered in	1902.	1904.	1906.
Number ordered	2	3	4
Classification	0.4-4.0	2-6-2	2-6-2
H.P. rating	600 at 18·3 m.p.h.	900 at 18·3 m.p.h. 1,200 at 37·0 m.p.h.	1,200 at 25 m.p.h. 1,500 at 40 m.p.h.
Full speed of motor in r.p.m.	128	225	225
Diameter of driving wheels	55"	59"	59"
Diameter of pony wheels	—	33"	33"
Total wheel base	21' 8"	31' 10"	31' 2"
Rigid wheel base	6' 7"	16' 1"	15' 5"
Total weight in tons	52	68	69
Weight on drivers in tons	52	47	47
H.P. per ton total weight	11·5	17·65	21·8

As a result of the success obtained in the Valtellina electrification, it was in 1905 decided to electrify the very important Giovi line from Campasso to Busalla. Work was commenced in the beginning of 1907, and on the 30th May, 1911, the regular electric service was commenced. In order to appreciate the difficulties that had to be encountered, it is necessary to consider the pre-electric conditions. The lines which unite Genoa and Liguria with the northern regions, and with the rich valley of the Po, are situated in most difficult country, where they cross the Apennines. In the 10·4 kilometres section of the Giovi line, comprised between Pontedecimo and Busalla, where the line crosses,

the average gradient is 2·7 per cent.; the maximum gradient in the tunnel is 2·9 per cent. and outside 3·5 per cent. The line has numerous ordinary and reverse curves of relatively small radius, 400 metres, often without any intervening lengths of straight, and there are six tunnels, the longest of which is 3,258 metres. At the time (1854) when a steam service was first started, these gradients were the heaviest that it had been attempted to overcome with locomotives with simple adhesion. It was not very long before the difficulties of this section, although double tracked all the way, were throttling the whole traffic, and it was found necessary to construct a new subsidiary line—Succursale de Giovi, also double track. The construction was very expensive on account of the numerous tunnels and viaducts which were necessary in order to limit the maximum gradient to the figure of 1·6 per cent. which had been decided. In a length of 24 kilometres there are 20 tunnels, one of which is 8·3 kilometres long, the average gradient of the whole line being 1·3 per cent. Even then, operating conditions were very difficult; it was necessary in the majority of cases to employ three locomotives to each train, and under these conditions the tunnels were a tremendous difficulty, and in August, 1898, there was a disaster in the Giovi tunnel, due to air fouling. The importance of this section should be recognised. Genoa is Italy's principal seaport, with an ever increasing traffic, 65 per cent. of which is transported over the Giovi lines towards Novi, where it gets distributed. In addition to goods in transit from other

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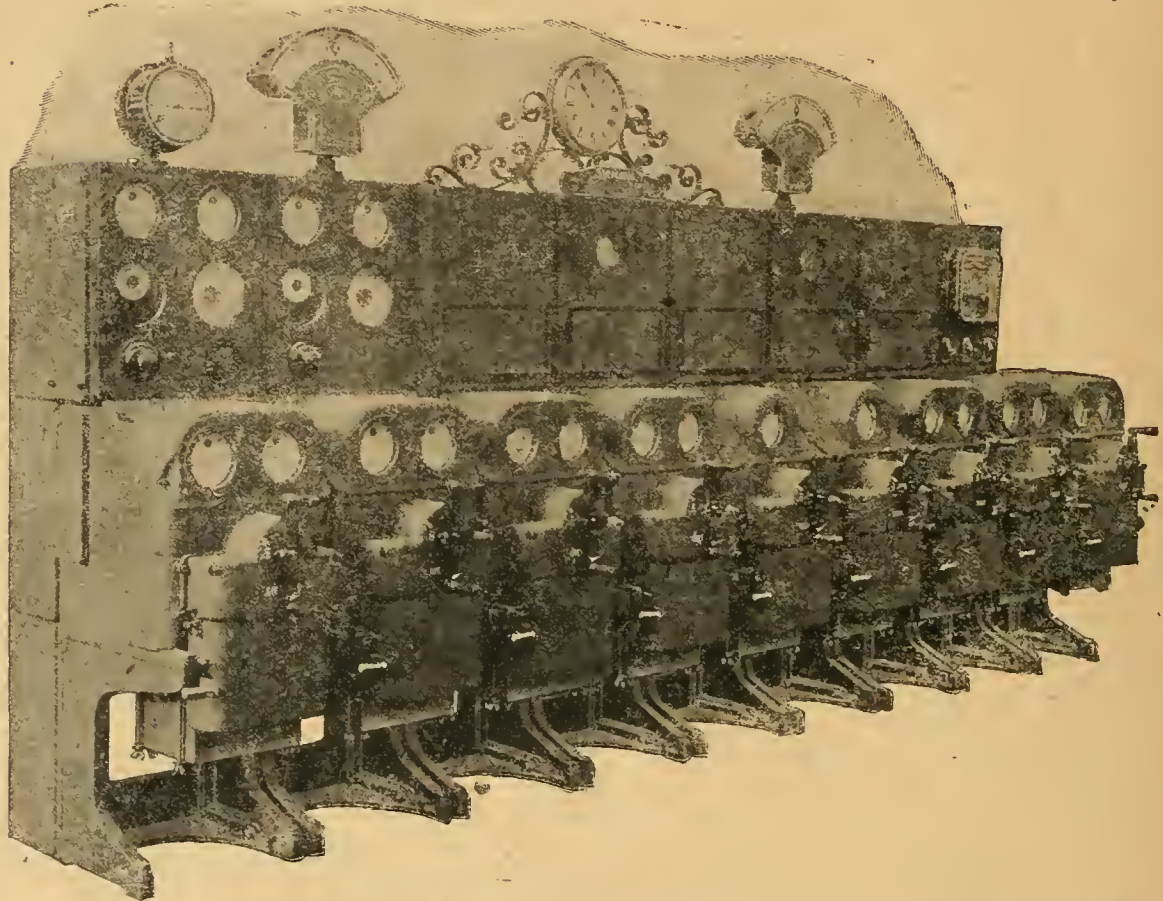
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regions, there is also a very heavy passenger traffic, since this forms the main line which unites the capital of Italy with the principal northern towns, such as Milan and Turin, and with the International lines over the frontiers to western Europe. A committee appointed by the Govern-

ment in 1903 decided that it was necessary to provide for a traffic on the two Giovi lines of a total of 2,400 goods wagons a day by the year 1923, and they concluded that, with steam conditions, the maximum capacity of the two lines would be as follows:—

	Passenger Trains.	No. of Trains.	Goods Trains.	Total No. of Wagons.
			No. of Wagons. per Train.	
Old Giovi	15	22 3 Locomotives.	17	374
Subsidiary Giovi ...	10	54 2 Locomotives.	19	1,566
Total	25	76	—	1,940

This was still substantially short of the daily requirements, and even so could only be obtained by constantly utilising the lines to their utmost capacity. It was therefore necessary to effect other improvements with the least possible delay, so that the ever-increasing needs of the traffic could be adequately met. A good deal of water flowed under the bridge whilst this committee were considering the problem, but, as previously stated, in 1905 they decided the solution was to electrify on the three-phase system, of which at that time they had had three years successful experience, and work was started in 1907. In 1908, however, to help matters out, five-coupled steam locomotives, weighing 75 tons nett, or 103 tons with loaded tender, were introduced. Details of these steam locomotives were as follows:—Number of axles, 5; weight of locomotive, 75 tons; weight of tender, 28 tons; diameter of driving wheels, 53 in.; capacity on a $3\frac{1}{2}$ per cent. grade, 170 tons; speed, 15.5 miles per hour; horsepower rating, 900. These were much more powerful engines than had hitherto been employed, and on the Pontedecimo-Basalla section were able to haul—1 locomotive 170 tons—total weight of train 267 tons; 2 locomotives 310 tons—total weight of train 504 tons; 3 locomotives 450 tons—total weight of train 741 tons; at a fixed maximum speed of 25 kilometres per hour, the time allowed for ascending trains between Pontedecimo and Basalla being 28 minutes for passengers and 31 minutes for goods. In the year 1909-1910, which was the last year of steam traffic, the following trains were run on these lines:—Passenger trains, ascending 5,610, descending 3,178; goods, ascending 3,183, descending 4,614. The total number of vehicles being—Loaded wagons, ascending 58,485, descending 79,106; empty wagons, ascending 1,854, descending 22,339; carriages and luggage vans, ascending 49,624, descending 31,555; total, ascending 109,963, descending 133,000. On August 1st, 1910, the electric service had commenced on goods trains, and increased progressively as follows:—August 1st, 5 ascending goods trains; August 22nd, 8 ascending goods trains; September 1st, 14 ascending goods trains; October 10th, 20 ascending goods trains. On May 1st, 1911, electric traction was extended to all the trains on the line, namely:—Passenger, 12 ascending, 6 descending; goods, 20 ascending, 13 descending; total, 32 ascending, 19 descending. The new electric locomotives were capable of exerting the maximum tractive effort permitted by the drawbar gear on the rolling stock, and with electric traction the service conditions were modified as follows:—With 1 locomotive 190 tons—total weight of train 250 tons; with 2 locomotives 380 tons—total weight of train 500 tons; with 3 locomotives 530 tons—total weight of train 710 tons. For ascending and descending trains, passenger and freight, the maximum speed was fixed at 45 kilometres per hour, and all descending trains were to operate regeneratively. A comparison of these results with the previous figures given for the five-coupled steam locomotive shows an increase in the train load in favour of electric traction of 20 tons with one locomotive, 70 tons with two locomotives, and 80 tons with three locomotives, but the advantage is greater when the weight of the locomotive itself is considered. For example,

with a single steam locomotive train, the useful load is 1.76 times the weight of the locomotive, the corresponding electric figure being 3.16, or an advantage in favour of electric traction of 80 per cent. For two and three loco. operation the advantage is 97 per cent. and 90 per cent. respectively. The maximum speed of the electric service, as stated, was fixed at 45 kilometres per hour, the schedule speed is 39.1 kilometres per hour for all trains, as compared to schedule speeds of 20.8 and 22.3 kilometres per hour for ascending freight and passenger trains, steam operated, representing an increase of 88 per cent. and 75 per cent. in this direction. It has been stated that, in 1909-1910, when steam conditions were most favourable, seeing that the power of the locomotive was at its maximum, and the Giovi tunnel specially well ventilated, omitting descending trains, there were 8,793 ascending trains in the year, or a daily average of 24 in a working period of 20 hours. We have also seen that the normal electric service was 32 trains per day, the working period being 17 hours. As a matter of fact, in many days there are supplementary trains, bringing up this figure to 42 ascending trains, or 75 per cent. over the possible steam service, without taking into account the shorter working period. In 1915 traffic was being handled on this line at the rate of 5,000,000 tons a year, and it is safe to say that the conversion has tripled the capacity of the line. The bulk of this traffic is handled by two or three locomotives per train for goods traffic, 4,000 to 6,000 h.p., and for passenger traffic two locomotives, or 5,200 h.p. of locomotive per train. The equipment of both passenger and freight locomotives consists of two three-phase, 16 $\frac{2}{3}$ period, 3,000 volt motors, arranged each side of a central axle carrying driving wheels. The rotors are fitted with cranks, and the crank pins are connected together on each side of the locomotive by an inverted triangular framework known as a Scotch yoke. In the apex of the framework is a vertical slot, in which slides a block forming the bearing of one of the crank pins of the central driving wheels; the rotation of the motor is therefore imparted to the driving wheels through the slotted crank pin bearing, and the slotted connection allows for any vertical motion of the axle relative to the motors, which are mounted on the locomotive framing. The other driving wheels are driven from the centre of the Scotch yoke by coupling rods. This description is taken for convenience from Dover, on Electric Traction, who goes on to state that the drive possesses the advantages of fewer parts and a lighter mechanical construction than a connecting rod drive in which a jack shaft is used.

(To be continued.)

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Company Meetings.

E.R. GOLD, COAL & ESTATE.

Mr. W. P. Fisher presided over the annual meeting of shareholders of the East Rand Gold Coal and Estate Co., Ltd., held in the company's boardroom, National Bank Buildings, on October 31. In moving the adoption of the directors' report and the balance sheet, Mr. Fisher said that the gross profit for the year amounted to £2,414 12s. 10d. and of this amount they had to write off £682 6s. 9d., being loss incurred during the year on farming operations, leaving the sum of £1,732 6s. 1d. to be carried to appropriation account. The colliery had conducted active operations uninterrupted during the year and the amount of coal sold was 95,123 tons, showing a monthly average of 7,927 tons and an advance over the previous year of 9,582 tons. From this appreciation in the output, slight though it was, it might naturally occur to shareholders that this should show enhanced profits, but whilst the price gained practically the same as that of recent years the costs continued steadily to increase,

through the rise in native and white wages, war bonuses and a further advance in the price of stores. The company's agreement with the Transvaal Coal Owners' Association had been renewed for a further period of five years as from the first of July of this year and the company's allotment had been fixed at 10,000 tons per month. The basis of prices for renewed fixed contracts showed a slight improvement, but certainly not in his opinion what it should be, considering the advance in working costs and also taking into consideration that the selling price of coal in the Transvaal was just about half of that realised by the Natal Collieries.

Their serious trouble was that they were not receiving orders for their coal in any way approximating their allotment, and although they received consideration for shortage, this did not in the smallest degree compensate them for the loss of tonnage.

Referring to the Estate, the chairman said that the agricultural prospects at the beginning of last season were particularly bright, but unfortunately during the month of November they had experienced extremely heavy hailstorms, and these

were followed by torrential rains all through the season, so that their crops were almost entirely destroyed. This resulted in a loss on the year's operations, but with ordinary luck they hoped to more than make up the loss during the current year. The breeding stock continued to thrive, and they were now reaping the benefit of having oxen of their own breeding for farm work.

The development of the various mines in the Far East Rand continued to disclose high values and a much higher degree of regularity in the formation compared to the Mines in the Central Rand, and he could only again express his confidence that when more settled times were reached a scheme for thoroughly prospecting their property would be possible, as he was still convinced that the Contact intercepted in their boreholes was the Van Ryn Reef. Referring to the influenza epidemic, Mr. Fisher said that although 75 per cent. of the natives and nearly all the white staff had been attacked, he was thankful to say they had not a single death to record from the disease.

The report and balance sheet were adopted, and the retiring directors were re-elected, as were the auditors, Messrs. C. L. Andersson and Co.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal and Engineering Record* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

According to a special cable in the *Star* this week, the *Evening News* says the Imperial Government is concerning itself in the matter of the low-grade mines of the Rand, and it is probable that the cost of explosives will be lowered and other steps taken to give relief to the gold industry. The matter is referred to in our leading columns.

* * * *

The following cable was despatched on Thursday to the London office of the Witwatersrand Deep, **Wit. Deep.** Ltd.: "Main crosscut at the 23rd level, the deepest point in the mine, has passed through the Main Reef body, the complete sampling at this single point giving an average value of 11.4 dwts. over an estimated stope width of 50 inches. Hitherto Main Reef has given only occasional payable values in this section of the mine, so that further exploration will be required before its mining possibilities here can be determined."

* * * *

Attention may be drawn to the advertisement inserted by Messrs. J. V. Stanton & Co. in this issue.

Stanton & Co. Enterprise. The material advertised is the result of British enterprise and is intended to replace material used with success by the Germans in connection with certain parts of electrical machinery. The purpose for the advertisement at this stage is to divert possible orders reverting to Germany owing to the fact that owners of electrical plant may think that they cannot adequately replace these parts elsewhere.

* * * *

The report of the directors of the Modderfontein B. for the quarter ended 30th September shows that **Modder. B.** the total development footage was 2,875, while the total footage sampled on reef was 1,942. The payable reef disclosures were as follows: Main Reef Leader, 1,256 feet; width, 17 inches; assay value, 23 dwts. The completion of the additions to the reduction plant, bringing it up to a capacity of 60,000 tons a month; was successfully accomplished during the quarter, resulting in an increase in tonnage output of 20,500 tons compared with the preceding quarter. A slight decrease in mine grade coupled with a certain amount of absorption in the new portions of the plant reduced the yield by 2s. 4d. per ton to 40s. 3d. Working costs were 4d. per ton lower, and the total working profit increased £6,939. The amount of development footage showed an increase. The native labour position has considerably improved. Towards the end of September, and during October, operations were considerably disorganised by the influenza epidemic. The Provincial Gold Profits Tax Ordinance, 1918, which was passed by the Transvaal Provincial Council on 25th June, 1918, has now become law. No provision, however, has been made in the attached accounts for the tax, as legal action will be taken with the view of testing the authority of the Transvaal Provincial Council to levy such taxation.

* * * *

The General Manager of the Transvaal Gold Mining Estates, in his last quarterly report, writes as follows: "Conditions underground and on the surface have gradually returned to normal after the recent floods. Transport difficulties still exist, and the supply of native labour continues to be below our needs. The tonnage milled for the quarter shows an increase of 2,100 tons, and the grade of

rock mined is about normal. Development has on the whole been satisfactory in the Brown's Hill, Iota and Ponieskrantz North areas, whilst results at Theta Extension and Columbia Hill Shales have been slightly more encouraging. The Bette Mine (recently purchased) has returned a small percentage of rock to the mill, and has justified our opinion of it. The tramline at Ponieskrantz North Mine came into operation in August, but the ore-bins are not yet completed, and the quantity of rock hauled to the mill has as yet been but small. The tramline is giving satisfaction. Prospecting has made good progress, and further encouraging indications on the Portuguese Horizon have been met with in the Theta Extension neighbourhood, but work on Grootfontein has been definitely discontinued. At Elandsdrift the work of reclaiming the lower portions of the mine after the summer floods has made good progress, and we have been able to resume the sinking of the western boundary shaft, with a view to testing the values in depth. Development in the mine itself continues of necessity to be very slow because of the water difficulty. The sale of wattle bark from our plantations has been very limited owing to the scarcity of shipping, but there is a ready market for all mining timber. At Vaalhoek, mining work on the Glynn's Reef Horizon in the River Section was resumed and has given satisfactory results, though values in this area are exceedingly erratic. The work of dewatering the lower levels of the mine has made fair progress, but until drainage work has been completed, and the low level pumps set to work once more, full development is impossible. Since the close of the quarter influenza has broken out in the district; a large number of the company's employees are ill and many of the natives have deserted. Operations are at present totally disorganised, and results will be adversely affected for some time."

* * * *

Reuter is officially informed by the Controller of Imports and Exports, Pretoria, that the following circular has been issued to all local priority committees in connection with imports from the United States of America. The procedure set out in this circular is now in force, and the particular attention of all importers from the United States of America is drawn thereto. To the secretaries of all local priority committees,—Please inform your committee that in terms of a memorandum approved by the British and American Governments the following procedure is now necessary in connection with the importation of goods from the United States of America for which assistance to import is desired: (1) All persons desiring assistance to import goods of any description whatever must make application to the local Priority Committee. (2) If the goods are not considered by the local Priority Committee to the Controller of Imports and Exports to be of national importance, the importer is at liberty to make his own arrangements with regard to the importation, but in such cases no assistance will be granted for the purpose of obtaining an export licence or shipping facilities. (3) If the goods are considered by the local Priority Committee or on reference to the Controller of Imports and Exports to be of national importance and the order has not been placed, the following procedure will be necessary: (a) Application must be made for priority assistance for export licence in quintuplicate and shipping priority in duplicate on the prescribed forms. (b) A copy of the indent must be attached to each copy of the application for export licence, but not to the copies of the application for shipping facilities. (c) The indent, which would be addressed to the manufacturer or agent of the importing company in the United States of America, must be placed by the Controller of Imports and Exports through the British War Mission in New York. (d) Payment for the goods, freight, insurance, etc., will be made by the Imperial Government's agents in New York, and the Imperial Government will look to the High Commissioner for the Union of South Africa in London for repayment. (e) The Imperial Government's agents will pay manufacturers on the conditions named in the contract, which are usually: (1) cost of

the goods on production of invoice, and (2) freight on production of bills of lading. (f) In view of (c), (d) and (e) above, it will be necessary for an importer to attach to his application a banker's guarantee or letter of credit for an amount sufficient to cover all charges. This document will be forwarded by the Controller of Imports and Exports to the High Commissioner for the Union of South Africa in London in order that he may be in a position to repay the Imperial Government in London on demand. (4) All orders on private account already placed cannot be assisted as above, and consignees must make their own arrangements as to finance, but if the goods are considered by the local Priority Committee, or on reference to the Controller of Imports and Exports to be of sufficient national importance, the Controller will assist if desired by making recommendations through the British Embassy in Washington for the issue of an export licence. In such cases application for shipping priority should be forwarded to the Controller through the local Priority Committees. (5) It is further pointed out that there is nothing to prevent an importer placing an order direct and making his own financial arrangements in connection therewith at any time for goods which are of national importance, but the American Board have emphasised that there is not much prospect of the order being fulfilled unless it is placed through the British War Mission in accordance with the procedure outlined above.

* * * *

The directors of the Modderfontein East, Ltd., have issued a report giving particulars of the reef disclosures for the quarter ended September 30, together with the results from the inception of the company to date. The results to date are as follows:

		F'tage advanced.	Reef sampled on reef.	Reef width Ins.	Value Dwt.
19th Level, Main Haulage North	1,909	30	20	2.0	
No. 1 Main Haulage Raise	1,451	1,135	17	7.1	
No. 2 Main Haulage Raise	568	450	15	7.5	
19th Level Drive North	69	45	17	3.8	
No. 1 Raise, 19th Level	137	125	16	15.7	
No. 2 Winze, 20th Level	258	258	14	14.8	
20th Level, Drive North	467	465	22	8.3	
20th Level, Drive South	732	565	19	43.4	
No. 1 Raise, 20th Level	179	175	7	60.7	
No. 3 Raise, 20th Level	228	225	15	9.3	
No. 1 Winze, 21st Level	87	80	20	88.8	
No. 2 Winze, 21st Level	588	588	15	22.8	
21st Level Drive South	283	260	10	17.0	
21st Level Drive North	189	185	12	4.1	
21st Level Intermediate Drive... ..	27	20	6	39.4	
No. 2 Winze, 22nd Level	101	100	14	36.6	
Crosscuts and Sundries	2,342	197	17	15.1	
No. 1 Incline	312	—	—	—	
No. 2 Incline	35	35	23	2.8	
Totals and averages.	9,962	4,938	16	18.4	
Drive from Modderfontein B.	983	461	24	5.9	

The drive from Modderfontein B. has been in faulted ground throughout the period, and has failed to disclose any reef body. No. 2 shaft has been sunk 398 feet, to a total depth of 898 feet; whilst walling was completed to a depth of 495 feet. An electrically driven pump was installed at the station at 473 feet. A considerable inflow of water as well as bad ground was met towards the end of the quarter, and the rate of sinking for the coming quarter will be affected on that account. The shaft has been in quartzite throughout the period. No. 3 shaft has been sunk 260 feet, to a total depth of 818 feet; whilst walling was completed to a depth of 685 feet. The shaft continued to be sunk in dyke, and has reached the horizon where reef could be expected. Sinking has therefore been stopped, and the extent of the dyke and the probable position of the reef are being tested by means of diamond drilling. Construction work has been limited to the completion of the second air compressor and a cooling dam and tower. The white labour force averaged 145, and the number of natives employed 1,028. The expenditure for the quarter amounted to £66,568.

TOPICS OF THE WEEK.

PEACE AND GOLD.

THE end of the war, unfortunately, does not put an end to the gold question, as is evidenced by the belated news from London that the low-grade mines are to be assisted. Authorities agree that the artificiality of the international exchange position will perforce have to continue for some time after the war, because it may turn out for a time to be more important to keep the gold currency reservoir adequately filled for the creation of credit for internal purposes than to settle balances of trade by gold shipments. As Mr. Strakosch, in the pamphlet reviewed in our last issue, well put it: "While there seems no doubt that the position of our foreign trade, on the resumption of peace activities, will not continue adversely on so large a scale as now, it is almost equally certain that we shall not revert to the pre-war conditions, but that we shall for some years after the war have to face a fairly substantial adverse net balance of trade. We shall have to re-stock the country by importing raw materials on a vast scale, our shipping industry will have to face severe competition from other maritime countries—notably the United States of America and Japan—and it will, of necessity, take a good deal of time before our manufacturing industries will be able to reach the stage where exports on a large scale can be resumed. What that adverse net balance of trade is likely to be and how long it will take to convert it into a favourable one, it is of course impossible to say, but let it be assumed, and this assumption seems not unjustified, that for some years after the war we shall have to face an adverse net balance of trade of, say, £150,000,000 sterling per annum, and that, owing to the insufficiency of gold in the currency reservoir to meet both the requirements of our internal and external trade, our currency, measured by the currency of other countries, will be at a discount of 10 per cent. The loss to the nation would then amount to £15,000,000 a year, or, putting it the other way, if our gold reservoir were sufficiently supplied to enable us to settle our adverse balance of trade by the remittance of gold and to do so without causing the value of money for internal purposes to be raised, then a saving would result of £15,000,000 per annum, which in assessing the value of gold has to be added to the saving which results from its power to create credit and to lower the rate of interest." Gold will, therefore, be as essential as ever after the war. We note also that the August bulletin of the U.S.A. Federal Reserve Board has brought the issue strongly before that country in the following terms. It says:

"Ever since the establishment of Federal Reserve banks, the Board has endeavoured by every legitimate means to increase the aggregate gold holdings of the banks. . . . Of late the Board has received questions from various quarters respecting the reasons of theory supporting the course which it has urged with respect to gold. The situation in this regard is perfectly plain. In proportion as the gold holdings of the Federal Reserve banks are increased, the ability of such banks to extend accommodation to other banks, or to issue notes, is enlarged. Taking 40 per cent. in gold as normally required as a minimum behind every note that is issued, it is clear that, in order to lend 100 dollars in Federal Reserve notes, a Federal Reserve bank must have on hand in its vaults, or with a Federal Reserve agent, 40 dollars in gold. In proportion as its reserve holdings are curtailed, its lending power is correspondingly reduced. Some question also has been raised with reference to the practice of hoarding gold. Every dollar of gold that is hoarded in withdrawn not only from reserve use but also from circulation. It is a net loss of that amount of metal to the community. The effect of its concealment is, therefore, to remove the possibility of providing the strongest possible gold-cover for our growing volume of bank-notes and deposits. The desirable conditions, under existing circumstances, is to have every dollar of gold in the Federal Reserve banks, while the circulating medium consists of currency based on gold. Money of every kind, whether gold or silver, should be deposited in bank and used, but not hoarded. Surrender of gold coin and gold certificates, and abstention from hoarding, means an increase in the volume of bank-credit available for the community, and an increased ability to finance its war and other requirements."

An extension of this doctrine is contained in the circular issued by the Federal Reserve Bank of San Francisco, where it is affirmed: "Gold in possession of a member bank or of an individual serves no necessary purpose which other forms of money would not serve, but in the possession of a Federal Reserve bank it gives financial protection to the country as surely as an army gives physical protection. To draw soldiers from the army or to keep them from the army

to perform services that others could perform, would weaken our physical defence and invite disaster. Likewise to hold gold out of the reserve of the Federal Reserve banks weakens our financial defence and invites financial disaster." Another interesting view is taken by Mr. B. L. Thane in an article in the *Mining and Scientific Press*:

"It is well known," says Mr. Thane, "that the issue of paper credits by the Central Powers to their own people and to the adjacent neutrals has been necessarily in far greater proportion to their gold reserve than in the case of the Allies. So long as these countries are dealing among themselves only and are unable to engage in international business, and just so long as their Governments remain strong enough to compel the peoples of the Central Powers to accept such paper on its face value, their actual gold reserve is not important; but the instant the war is ended and the Central Powers are again compelled to enter foreign trade in order to replenish their exhausted supplies of material their credit will have to be maintained by a gold reserve, else it will fall to pieces, causing a tremendous financial disaster. The German financiers are aware of this, but expect to build up their gold reserve through their ability to sell material and supplies in a world market at a less cost than they can be produced in the Allied countries. There is grave danger that this condition will actually develop, so far as this country and the Allies are concerned, because one of the results of the war has been greatly to increase the cost of labour—that is, labour has demanded and received much higher wages, approximating 100 per cent. above the average before the war. . . . The danger from this lies in the fact that the Central Powers, and Germany in particular, have not increased the wage scale in like proportion; so that the cost, measured in gold, of producing all articles in Germany after the war, or even now, is less than it is in this country—very much less. The German financiers have boasted of this repeatedly. It amounts to the same thing on the part of Germany as placing a premium on our gold supply, such premium being equivalent to the difference in the average cost of labour between the Central Powers and the United States and her Allies. While tariffs and trade agreements may be developed and arranged to offset this difference in some degree, the easiest, the most sensible, the most practical, and the quickest way to place labour and industry on a parity with that in the United States and the Allied countries will be arbitrarily to increase the value of gold in an amount sufficient to offset the average difference in wage scale existing between the Allies and the Central Powers at the present time. . . . It has been argued that such change in the value of the basic metal, gold, would derange the structure of credit, but this can be obviated by agreement between England, France, and the United States, the countries that control the gold supply of the world, and also by suitable legislation in their respective countries."

All this goes to show that the whole problem goes deeper on investigation and still remains to be solved satisfactorily.

A Bill dealing in a comprehensive manner with electric power supply is now awaiting its final reading in the Legislative Council of the B.E.A. Protectorate. The measure is designed to foster and promote bulk supply methods, and to ensure standardisation. Public and local authorities must adopt the standards and specifications of the British Engineering Standards Committee. The standard system for the Protectorate will be three-phase at 50 periods, excepting for special purposes, and, excepting the supplies to authorised distributors and for special purposes, the pressures of supply will be 415 and 240 volts. All apparatus to be used in connection with a standard system, by a licensee, must comply with these standards, and that which may be used by others on a standard system must be marked when usual or necessary as to its capacity or value, in terms of British standards. Practically every form of energy which industrialists in the Protectorate will require must be obtained from or by the conversion of electrical energy generated by water power, internal-combustion engines, or oil-fired boilers. Consequently, a demand for apparatus is developing which should not be neglected by British manufacturers. The Government Electrical Engineer (Mr. James McBlain) will be pleased to receive catalogues and other information, with prices where possible, relating to hydraulic, internal-combustion, and steam types of prime movers, electric generators and motors, transformers, E.H.P.-transmission line materials, split-phase and other control and switching apparatus, indicating and recording meters, testing and measuring apparatus, etc.; also relating to apparatus for any industrial application of electrical energy, including farm and electroculture equipment, electrolyzers, ozonisers, automobiles, batteries, and battery-charging, coffee drying and roasting, steam raising, mashing and distilling, casting and welding, cement burning, domestic heating and cooking, and X-ray and electro-medical equipment, etc.

THE YEAR WITH THE "J.C.I."

THE report of the directors of the Johannesburg Consolidated Investment Company, Ltd., shows that the profit for the year, after providing for depreciation, English and Colonial income tax, and other charges, amounts to £200,739 1s. 11d. This sum, together with £158,556 10s. 6d. brought forward, makes the total available balance £359,295 12s. 5d. On the 24th June the directors declared a dividend of 5 per cent. (free of income tax), this declaration being on the same basis as that of the previous year. The net distribution to shareholders totals £197,500, leaving £161,795 12s. 5d. to be carried forward. In accordance with the company's usual practice, its shareholdings have, where necessary, been written down to their market value as at the 30th June last. Notwithstanding the acquisition of new and important mining interests, the company retains substantial liquid assets in the form of British Government securities and cash at bankers. During the year under review the ground known as the Springs-Geduld Area, consisting of 2,055 claims on the Eastern Rand, was submitted for public tender by the Union Government of South Africa, and secured by Messrs. Barnato Brothers. New State Areas, Limited, with a subscribed capital of £1,500,000 has been formed to work the ground, and the company has acquired a very large interest in this new concern. The property adjoins that of the Government Areas, and your directors have every confidence that this new interest will prove a very valuable asset. The position of the various gold mines under the company's control is, as usual, fully dealt with in the reports which they respectively issue. At Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., the ore reserves now exceed 7,600,000 tons, the estimated value of which is 7.5 dwts. over 79 inches. The results of the enlargement of the reduction plant are now reflected in the large increase in the tonnage crushed, the substantial reduction in working costs, and the consequent increase in profits. Further additions to the reduction plant have been in course of erection during the year, and these should still further augment the profits when they become operative. Within the last twelve months an agreement has been reached with the Union Government of South Africa, under which the scale regulating the Government's participation in the profits of the Company has been revised. This will remove many of the anomalies which previously existed, and will prove of advantage to both parties to the agreement. The Van Ryn Deep, Ltd., also shows excellent results. The ore reserves of the company are in the neighbourhood of 2,300,000 tons, of an estimated value of 8.9 dwts. per ton over a stoping width of 67 inches. Arrangements were made early in the year for a considerable addition to the company's reduction plant, which it is con-

fidently anticipated will materially add to the tonnage crushed, and will result in still further increasing the company's annual profits. It may be mentioned that a 10 per cent. interest in the share capital of the New State Areas, referred to above, was offered to and accepted by the Van Ryn Deep, Ltd. The Randfontein Central Gold Mining Company, Ltd., suffered to a greater degree than most mining companies from the difficulties caused by the war, frequent labour troubles, and from the very heavy floods which occurred in Johannesburg early in the present year. The policy previously outlined, including systematic shaft sinking and development, is being steadily pursued, and will enable the company before long to show a progressive improvement in its profits.

All possible measures have been taken to meet essential requirements, but owing to shipping and other difficulties incidental to the war the cost of all mining stores and materials continues to impose a heavy burden on the industry. The persistent rise in working costs necessarily gives cause for anxiety, and unless relief can be obtained the total Rand output of gold must inevitably be adversely affected. The value of the gold produced by the company's group of mines for the year ended 30th June last totalled £7,760,957. Shareholders are aware that the company holds important interests in the leading diamond mines of South Africa, which have undoubtedly secured great benefits from the policy of control of output inaugurated by your Chairman, which was fully referred to in the directors' previous report. Although no improvement of importance can be recorded in the company's net revenue from this source, it may be mentioned that the inquiry for houses and building sites during the year under review has considerably increased.

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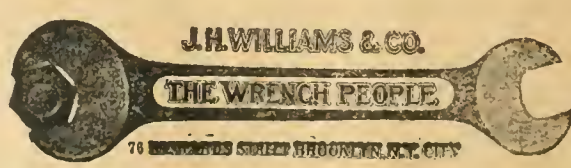
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PROGRESS ON THE BARNATO MINES.

Points from the Quarterly Reports.

Consolidated Langlaagte Mines.—The total profit for the quarter was £43,126. The expenditure on capital account amounted to £1,401, and debenture interest £1,375. Owing to native labour shortage, there was a decrease of 6,650 tons in the quantity of ore crushed as compared with the previous quarter. Working costs increased by 1s. 5d. per ton, but as the grade improved to the extent of 1s. 5d. per ton, the gross profit showed a decrease of only £2,041. The development footage sampled totalled 2,770 feet, and gave the following results: Payable, 1,453 feet, having an average value of 43.7 dwts. over 14 inches of reef. Unpayable, 1,317 feet, having an average value of 7.6 dwts. over 16 inches.

Ginsberg.—The total profit for the quarter was £1,960. The quantity of ore crushed was the same as for the previous quarter. There was an improvement in the grade of 1s. 4d. per ton, and working costs were about 4d. per ton higher. The gross profit was £1,955 above that for the second quarter.

Glencairn.—The total profit for the quarter was £2,170. There was an increase of 2,150 tons in the quantity of ore milled, and as the profit per ton showed a slight improvement, the gross profit was £142 more than that for the previous quarter.

Government Areas.—The total profit for the quarter was £251,000. The expenditure on capital account amounted to £27,652. The mine received an increased supply of native labour in August, and as a result the quantity of ore crushed was 20,000 tons greater than that for the previous quarter. The grade improved to the extent of 1s. 10d. per ton, and as there was only a slight increase in working costs, the gross profit was £39,517 higher than that for the second quarter of the year. The development footage sampled totalled 5,750 feet and gave the following results: Payable, 4,240 feet, having an average value of 16.1 dwts. over 42 inches of reef. Reef partly exposed: 100 feet, having an average value of 2.9 dwts. over 48 inches. Unpayable: 1,410 feet, having an average value of 4.9 dwts. over 30 inches. The payable ore reserves were increased by 300,000 tons, and now stand at 7,930,000 tons.

Langlaagte Estate.—The total profit for the quarter was £43,327. The expenditure on capital account amounted to £3,716. There was an increase of 12,310 tons in the quantity of ore milled, as compared with the previous quarter, due to improvement in native labour supply. Working costs were reduced by 4d. per ton, and the grade showed an improvement of 8d. per ton. As a result the gross profit was £10,485 higher than that for the second quarter of the year. The development footage sampled totalled 2,483 feet, and gave the following results: Payable, 1,920 feet, having an average value of 31.2 dwts. over 19 inches of reef. Unpayable, 559 feet, having an average value of 5.8 dwts. over 17 inches.

New Primrose.—The total profit for the quarter was £4,491. The expenditure on capital account amounted to £50. The gross profit showed an increase of £1,489 as compared with the previous quarter. This was mainly due to the tonnage milled being increased by 2,100 tons. The grade was about 5d. per ton higher, and there was a slight reduction in working costs. The development footage sampled totalled 415 feet, and gave the following results: Payable, 210 feet, having an average value of 7.4 dwts. over 45 inches of reef. Unpayable, 205 feet, having an average value of 2.4 dwts. over 17 inches.

New Unified.—The total profit for the quarter was £7,918. Working costs were 4d. per ton higher, and as the quantity of ore crushed was slightly less, the gross profit was £356 below that for the previous quarter. The development footage sampled totalled 150 feet and gave the following results: Payable, 100 feet, having an average value of 64.2 dwts. Unpayable, 50 feet, having an average value of 6.2 dwts. over 17 inches.

Randfontein Central.—The total profit for the quarter was £35,985. The expenditure on capital account amounted to £64,344 and debenture interest £38,106. Steady progress was being made towards a return to more normal conditions when a strike occurred amongst the reduction works employees at the end of August, and this caused a complete cessation of milling for five days. Towards the end of September operations were again disturbed by the outbreak of Spanish influenza. The quantity of ore milled showed a decrease of 17,700 tons as compared with the previous quarter. There was an improvement in grade of 11d. per ton, but working costs were 1s. per ton higher, and the gross profit was £2,604 less than that of the previous quarter. The development footage sampled totalled 10,490 feet, and gave the following results: Payable, 8,998 feet, having an average value of 21.7 dwts. over 17 inches of reef. Unpayable, 1,492 feet, having an average value of 7.1 dwts. over 25 inches.

Van Ryn Deep.—The total profit for the quarter was £162,563. The expenditure on capital account amounted to £4,311. The enlarged reduction plant was brought into operation at the beginning of July, and resulted in an increase of 18,490 tons in the quantity of the ore milled as compared with the previous quarter. The grade was 1s. 4d. per ton lower, and a slight reduction was made in the working costs. The gross profit showed an increase of £12,274. The development footage sampled totalled 855 feet, and gave the following results: Payable, 695 feet, having an average value of 13.8 dwts. over 50 inches of reef. Unpayable, 160 feet, having an average value of 5.3 dwts. over 26 inches.

Witwatersrand.—The total profit for the quarter was £22,737. The expenditure on capital account amounted to £3,858. Owing to a shortage of native labour it has been impossible for the mine to maintain its normal rate of crushing. The quantity of ore milled shows a drop of 9,750 tons as compared with the previous quarter. Working costs increased by 1s. 3d. per ton, and the grade showed a slight decrease. As a result the gross profit was £9,887 less than that for the second quarter. The development footage sampled totalled 1,620 feet, and gave the following results: Payable, 800 feet, having an average value of 10.7 dwts. over 39 inches of reef. Unpayable, 820 feet, having an average value of 3.6 dwts. over 38 inches.

New State Areas.—Preliminary operations were commenced on the property of the New State Areas in March, 1918, and since then considerable progress has been made with the erection of buildings and plant. Although it is impossible to import plant from overseas at the present time, endeavours have been made to instal permanent equipment wherever possible. Wooden headgears have been designed of a sufficient height and structure as will render them permanent; and the hoisting engines which have been purchased locally are also suitable for the permanent installation. Two shafts—known as the north shaft and south shaft—are being sunk. Each shaft is 11 ft. 3 in. wide by 26 ft. 3 in. within, and consists of four long compartments 6 ft. within and 9 in. dividers. At the 30th September the depth of the shaft was as follows: North shaft, 82 feet; south shaft, 100 feet.

New Patents.

612. Ernest Robert Goodward.—A method of producing a dry gaseous mixture for use as an explosive charge or fuel for internal combustion engines.
613. Gabriel Christian Erasmus Keet.—Vanning table.
614. Frank Popper.—An improvement in hose, water, air, steam, and other pipe connections.
615. Thomas Dobbie.—Improvements in treating solids with gases and particularly in the manufacture of bleaching powder.
616. Albert Lionel Norridge.—Improvements in brackets for supporting shelving and the like in shop windows and other places.
617. Tobias Johannes Stephanus Fourie.—Improvements in safety arrangements for hoisting plants.

LATEST FROM THE "GOLDFIELDS" COMPANIES.

The following is a summary of the operations of the Gold Fields companies for the quarter ended September 30. Owing to the spread of influenza to the native territories, the native labour position is not clear at the present time, but a shortage is expected for some time.

SIMMER AND JACK.

The development footage accomplished during the quarter amounted to 1,288 feet, the footage sampled being as follows:—

	Footage sampled.	Reef width. inches.	Reef value. dwts.
Main Reef	285	32	10.5
Main Reef Leader	31	19	3.5
South Reef	73	36	8.4

Tons milled, 176,500. Working profit (including sundry revenue), £39,469, less, however, £5,314, appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc. Gold in reserve, £8,542. Owing to the spread of influenza to the native territories the native labour position is not clear at the present time, but a shortage is expected for some time.

ROBINSON DEEP.

The development footage accomplished during the quarter amounted to 2,415 feet, the footage sampled being as follows:—

	Footage sampled.	Reef width. inches.	Reef value. dwts.
Main Reef	131	30	2.4
Main Reef Leader	649	22	21.3
South Reef	279	25	16.0

Tons milled, 131,300. Loss on working (including sundry revenue), £1,766. Appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, Government taxation, etc., including also interest on joint loan from the guarantors, amounted to £7,931. Gold in reserve, nil.

The "Chris" shaft came into partial use on September 2, since when operations there have been extended gradually. As was anticipated, the change-over militated largely against profits, which were more severely affected through influenza troubles, bringing operations to a standstill for a time. This has accentuated shortage of native labour, from which it is feared it will take some time to recover.

In view of war conditions seriously affecting profits, also owing to moving ground troubles at No. 1 shaft, making it urgently desirable to hoist all possible ore through the "Chris" shaft, and it being consequently essential to transfer to that shaft to the greatest possible extent at the earliest moment, it was necessary to put in a third hoist and other equipment. In view of the foregoing and possible serious effects of influenza upon immediate future profits, arrangements have been made for borrowing up to a further £100,000 for carrying out the new scheme. The lenders have the right of asking for repayment of this loan before any further preference dividends are paid.

THE JUPITER.

The development footage accomplished during the quarter amounted to 1,445 feet, the footage sampled being as follows:—

	Footage sampled.	Reef width. inches.	Reef value. dwts.
Main Reef	701	35	7.5
Main Reef Leader	274	37	14.0
South Reef	171	37	6.8

Tons milled, 72,100. Working profit (including sundry revenue), £7,446, less, however, £1,538 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc. Gold in reserve, nil.

SIMMER DEEP.

The development footage accomplished during the quarter amounted to 1,326 feet, the footage sampled being as follows:—

	Footage sampled.	Reef width. inches.	Reef value. dwts.
Main Reef	571	42	8.0
Main Reef Leader	196	27	8.8
South Reef	250	35	11.3

Tons milled, 131,800. Loss on working (including sundry revenue), £2,291. Appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, interest on debentures, debenture guarantors' remuneration, debenture trustees' fees, etc., amounted to £12,535. Gold in reserve, nil.

Operations were adversely affected by a slightly lower grade and higher working costs resulting from influenza troubles and minor interruptions. A start has been made in replacing native labour by machine drills of the jack hammer type, and the policy is to continue further in this direction. Owing to increased working costs making fair profits impossible under the existing abnormal conditions, but which could be expected in normal times, arrangements were come to at meetings of debenture holders on August 29 last whereby redemption of the first and second debentures was suspended for five years and the payment of interest on the second debentures postponed for a similar period.

SUB NIGEL.

The following is a summary of the operations of this company for the quarter ended September 30: The development footage accomplished during the quarter amounted to 3,274 feet, of which a distance of 2,345 feet was advanced on reef; 2,315 feet were sampled, of which 1,050 feet gave 12.3 dwts. over a stopping width of 42 inches, whilst the average of the balance of footage sampled was not within the pay limit. Tons milled, 30,000. Working profit (including sundry revenue), £26,678, less, however, £3,632 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc. Gold in reserve, £13,463.

SOUTHERN VAN RYN.

Particulars and values of reef intersected recently in the two boreholes have already been published. Shareholders are reminded of the option rights in respect of 180,000 £1 shares, 25 per cent. of which must be taken up not later than December 31, 1918, on the terms and conditions agreed upon, in order that the rights to take up the remaining 75 per cent. of such shares may be retained.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

QUARTERLY REPORTS OF THE ALBU GROUP.

The following information is given in the quarterly reports of the companies controlled by the General Mining and Finance Corporation:—

NEW GOCH.

Total profit for quarter, £220 15s. The expenditure on capital account for the quarter amounted to £5,087 12s. 2d. The development footage sampled totalled 800 feet, and gave the following results over an average stopping width of 54 inches: Payable, 680 feet, having an average value of 8.51 dwts.; unpayable, 120 feet, having an average value of 3.13 dwts.

WEST RAND CONSOLIDATED.

Total profit for quarter, £5,268 14s. 5d. The expenditure on capital account for the quarter amounted to £7,357 8s. 9d. The tonnage milled was adversely affected during the quarter by breakdowns in the pumping plant at the Rand shaft, necessitating the hoisting engines being used for baling. The development footage sampled totalled 2,230 feet, and gave the following results over an average stopping width of 50 inches: Payable, 1,300 feet, having an average value of 9.88 dwts.; unpayable, 930 feet, having an average value of 2.9 dwts.

AURORA WEST.

Total profit for quarter, £1,941 7s. 9d. The expenditure on capital account for the quarter amounted to £345 18s. 7d. Shortage of native labour continues to adversely affect the results obtained from the mine. The development footage sampled totalled 876 feet, and gave the following results over an average stopping width of 42 inches: Payable, 521

feet, having an average value of 7.86 dwts.; unpayable, 355 feet, having an average value of 2.49 dwts.

ROODEPOORT UNITED.

Total loss for quarter, £8,999 7s. 6d. The expenditure on capital account for the quarter amounted to £968 12s. The fall in grade referred to in the report for the previous quarter became still more marked during the period under review. The development footage sampled totalled 960 feet, and gave the following results over an average stopping width of 46.4 inches: Payable, 380 feet, having an average value of 7.9 dwts.; unpayable, 580 feet having an average value of 2.50 dwts.

MEYER AND CHARLTON.

Total profit for quarter, £67,805 2s. 11d. A percentage of 10.8668 of the net produce from mining operations is payable to the Government in respect of certain undermining rights leased to the company. The expenditure on capital account for the quarter amounted to £532 11s. 10d. The development footage sampled totalled 180 feet, and gave the following results over an average stopping width of 59.6 inches: Payable, 165 feet, having an average value of 15.23 dwts.; unpayable, 15 feet, having an average value of 1.76 dwts.

VAN RYN ESTATE.

Total profit for quarter, £19,656 4s. There was no expenditure on capital account for the quarter. The development footage sampled totalled 1,255 feet, and gave the following results over an average stopping width of 48 inches: Payable, 850 feet, having an average value of 6.7 dwts.; unpayable, 405 feet, having an average value of 2.1 dwts.

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THE OCTOBER GOLD OUTPUT IN DETAIL.

Returns Second Lowest for the Year—Effects of Influenza.

THE output for October shows a considerable drop and is the second lowest for the year. The lowest return was in February, when the bottom levels of many of the mines in the central area were flooded, and the October return, with two more working days, is 20,000 ozs. better than that in February. That the output for the last month is so good is remarkable considering that operations on every mine were affected by the influenza scourge, but the only mine that has failed to make a return is the Transvaal Gold Mining Estates at Pilgrims Rest, where the administrative staff is laid low. The total output was 679,764 ozs., of the value of £2,887,455, the decrease being 28,442 ozs. and in money £120,812. The Witwatersrand mines returned 667,955 ozs., showing a decrease of 19,008 ozs., and outside districts 11,809 ozs., representing a decrease of 9,434 ozs. Altogether there were 190 fewer stamps operating. An analysis of the returns shows that fourteen of the 50 producers on the Rand made losses aggregating over £38,000. Of the six producers in the Consolidated Gold Fields group only two, the Simmer and Jack and the Sub Nigel made profits which totalled £12,559, while the losses of the other four amounted to £16,685, leaving a balance on the wrong side of £4,126. The Princess made a loss of £5,797, the Roodepoort United of £7,241, and others made losses ranging from £2,000 down to £100. The E.R.P.M. had a good month owing to the availability of the ore that was milled in September, but could not be hauled owing to a shaft accident, and for the first time for some months profit was sufficient to meet standing charges. The grade of ore at present being mined shows signs of improvement. At the last day of the month there were 173,153 natives employed on the gold mines, a decrease compared with September of 6,246.

Total output	679,764 ozs.
Value	£2,887,455
Decrease	28,442 ozs.
Value	£120,812
Witwatersrand	667,955 ozs.
Value	£2,837,294
Decrease	19,008 ozs.
Value	£80,738
Outside Districts	11,809 ozs.
Value	£50,161
Decrease	9,434 ozs.
Value	£40,074
Stamps	8,694
Decrease	190

INDIVIDUAL RETURNS.

	Value.	Increase.	Decrease.
Bantjes Consolidated	£23,617	—	£1,712
Cty and Suburban	30,974	£3,317	—
City Deep	92,159	—	8,121
Con. Main Reef	69,799	—	1,932
Durban Roodepoort	302	—	420
Durban Deep	38,518	2,799	—
East Rand Proprietary	131,769	19,735	—
Ferreira Deep	59,965	5,025	—
Geduld Proprietary	61,647	—	2,035
Knight Central	29,921	—	3,122
Luipaardsvlei	19,336	—	2,064
Modder B.	116,621	1,686	—
Modder Deep	86,960	1,852	—
New Heriot	16,371	174	—
New Kleinfontein	73,193	—	2,374
New Modder	167,909	—	2,332
Nourse Mines	53,487	—	1,122
Princess Estate	20,691	—	1,975
Robinson	40,128	—	2,991
Rose Deep	55,072	867	—
Village Deep	58,037	—	8,313
Village Main Reef	28,804	—	2,769
Wit. Deep	35,107	—	1,322
Wolhuter	35,830	—	2,922
Con. Langlaagte	50,301	—	2,893

	Value.	Increase.	Decrease.
Ginsberg	13,907	900	—
Glencairn	11,588	—	1,100
Government Areas	200,183	—	2,769
Langlaagte Estate	59,519	—	1,508
New Primrose	15,899	38	—
New Unified	12,221	200	—
Randfontein Central	159,455	—	15,815
Van Ryn Deep	98,505	565	—
Witwatersrand	37,715	—	2,337
Aurora West	14,013	—	1,610
Jupiter	26,990	—	1,810
Knights Deep	63,487	—	6,962
Meyer and Charlton	40,698	2,171	—
New Goch	11,005	—	1,401
Robinson Deep	52,735	998	—
Roodepoort United	19,421	—	2,051
Simmer and Jack	56,299	—	8,475
Simmer Deep	46,334	3,993	—
Van Ryn	36,153	—	105
West Rand Consolidated	31,225	—	3,521
Geldenhuys Deep	57,833	2,485	—
Brakpan	81,748	—	5,810
Crown Mines	206,788	—	11,077
Springs	73,383	—	13,300
Vogel Estate	—	—	1,784
Miscellaneous	10,612	5,281	—

OUTSIDE DISTRICTS.

Sub Nigel	24,191	—	4,698
Barrett	799	—	492
Glynn's Lydenburg	5,331	—	3,641
T.G.M.E.	—	—	26,124
Miscellaneous	19,840	—	5,116

GROUP RETURNS.

	October.	September.
Rand Mines	£252,873	£248,833
Barnato	170,688	200,879
Albu	17,992	26,400
Union Corporation	63,666	63,457
Gold Fields	4,126*	18,240
Cons. Mines Selection	49,472	64,503
Totals	£554,691	£622,312

COMPARISON WITH LAST YEAR.

January	£3,033,653	£3,324,118
February	2,802,477	3,063,976
March	2,957,614	3,343,363
April	3,016,045	3,155,121
May	3,148,915	3,310,618
June	3,091,058	3,227,101
July	3,127,174	3,219,094
August	3,144,211	3,214,079
September	3,008,267	3,135,807
October	2,887,455	3,191,279

LABOUR FIGURES.

The number of natives employed on the last day of the month by the W.N.L.A. and contractors was:—

On gold mines	173,153
On coal mines	11,824
On diamond mines	4,749
Total	189,726

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of October, 1918:—Tons crushed, 2,604; yielding 1,255 fine ozs.; estimated value of month's output, £5,219; estimated profit for the month, £671. Milling ceased on 22nd October owing to influenza epidemic; not yet resumed.

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A REVIEW OF ECONOMIC PROGRESS IN SOUTH AFRICA.—II.

Points from the Annual Report of H.M. Trade Commissioner.

CENTRAL BUYERS' COMMITTEE.

The first step necessary was to centralise the whole supply business in the hands of one buyer, and the necessary preliminary to further buying was a gigantic stock-taking, returns being called for and collated of all mine supplies at the mines, in the hands of merchants, and on the water. Further, returns of the normal consumption of all stores having been similarly collated, it was possible to begin reducing excess stock to the prescribed limit of six months' supply. Until that limit is reached no orders may be placed overseas. The result is an organisation of buying for the mines hardly even dreamed of as possible in pre-war days—the whole buying from overseas being focussed in one buyer's hands. How far the present system is likely to be permanent is a question depending on intricate considerations. At least it is a possibility which must be faced with serious thought. If it remains as a permanent legacy of the war it cannot but produce profound modifications in the whole business organisation built up for supplying the requirements of the mines. Side by side with this change in buying and the carrying of stocks of imported goods, local manufacture has been making very notable strides, also largely as the result of the war. If the local production of pig iron proves a success, it is impossible to ignore the potentialities which stare one in the face. Centralised in an area of, say, 100 square miles, is a huge market for all iron and steel products, situated 500 miles inland at an elevation which makes haulage from the coast costly, and amply provided with exceedingly cheap coal, with lime and with high-grade cement. Either or both of these factors, centralised buying and local manufacture, must exercise a profound effect on the whole supplying organisation which has grown up and crystallised in the pre-war time.

AMERICA THE UNITED KINGDOM'S CHIEF COMPETITOR.

Germany had secured a share of the trade in South Africa more nearly equal to that of the United States than in the other Dominions, and, certainly, it must be admitted that this share was not inflated as that of the United States is by natural products and semi-manufactured commodities. Nevertheless, it is as foolish to minimise the proportion of manufactured goods included in America's $9\frac{1}{2}$ per cent. share of South Africa's imports for 1913 as it is to overlook the overwhelmingly greater resources which lie behind America's export trade than those of any other economic rival of the United Kingdom. To those who have in the past been endeavouring to find a market in the United States for their manufactures, it has, of course, been obvious not only that most branches of manufacture were being carried on in the United States, but that behind that tariff wall lay an individual consuming market probably the largest economic unit in the world; a market as large as the United Kingdom and Germany combined, and with probably a much greater consuming power owing to the higher general standard of living. In view of the general recognition in these days of interdependence of production cost and scale of production, to ignore America's domestic manufactures and to point scornfully at the smallness of her pre-war exports of manufactured goods was an economic error fully as great and misleading as the surprise, so often expressed by another school of thought, at the rapidity of expansion of export trade from the United States. Given the huge home market and boundless natural resources of the United States, the expansion of America's export trade in all directions and in all classes of goods is a foregone conclusion. The United Kingdom can, no doubt, retain her share, if not her proportion, of world trade by strengthening her organisation and improving her methods; but it is not reasonable to expect her, indefinitely, to limit and outdistance American export trade, or, for the failure to do so, to blame the British manufacturers, officials, or other persons. The South African import returns for 1917 show that the United States supplied goods to a value of 6·2

million pounds, as against 6·1 million pounds, 4·4 million pounds, 3 million pounds, and 3·7 million pounds in the previous four years, respectively. In view of the enormous rise in prices generally, this expansion is not so great perhaps in reality as in appearance. At the same time, a close analysis shows that the increased share of imports is very much more important than is indicated even by the increased percentage. Of the manufactured goods in which gains are to be noted, the most important group is "Iron and Steel." The value of the imports of this group from the United States increased by £250,000, primarily, no doubt, as a result of the war. To this amount must be added £45,000 increase in fencing and baling wire and £13,000 in railway material, South Africa having had to depend almost entirely on the United States both for light railway material and wire, instead of Germany, which had an important share of both trades. In motor bicycles the increase on the year is £19,000; but this is part of a continuous inroad into a virtual monopoly of the United Kingdom. Out of an importation of £164,000 in 1914, the United States only supplied motor bicycles, tyres and parts to the value of £13,000. In 1917 her share of the importation of £136,464 of motor bicycles and parts (excluding tyres) is £73,509.

Turning to the destination of exports from the Union of South African produce we find that the purchases of Japan were valued at £2,842,000, all of which, except £30,000, represented wool. It is understood that Japanese buyers confined their attention exclusively to high grade wool. The United States purchased wool to a value of £4,500,000 and also Angora hair to a value of £131,000. About half the small export of ostrich feathers, and hides and skins to the value of £796,000, also went to the United States—the balance, representing sundries, being only slightly over £80,000.

ENTREPOT TRADE.

Exports from the Union are complicated to an increasing degree by the fact that, while local produce and manufactures are finding a widening market in the neighbouring Colonies and Protectorates, both British and foreign, as well as in Rhodesia, the entrepôt trade for overseas products imported and re-sold by merchants in the Union for those same destinations is growing simultaneously.

INDUSTRIAL PRODUCTION.

The census of industries which was taken during the year reveals creditable progress. Turning to the figures of output by classes and industries, they are found to have a very wide range, but comparatively few have attained to great importance. A very incorrect inference might be drawn from the fact that as an easy first among industries we find engineering with an output of £7 millions. From a study of other tables supplied we learn that nearly £4 millions of this output is contributed by the Government railway shops, and a further £2½ millions by the engineering shops of the mines, leaving only £500,000 as the output of all other engineering works in the Union.

OUTPUT OF VARIOUS GROUPS.

With an output of £5½ millions comes flour milling. Sugar (raw and refined) figures third with £3 millions. Another table shows the actual output of raw sugar as worth £1,875,000. Biscuit making, even before the war, was well established, and at present the local industry is supplying all local requirements. It is, however, in the census returns merged with cake and bread making in a combined output valued at £2 millions. It is, therefore, not possible to make any comparison with the imports or estimate of consumption. The only other industrial groups returning an output of over £2 millions are building and contracting, and electricity and gas generation and distribution. Both of these being of necessity local work, hardly call for comment. The use of coal gas in the Union is insignificant either for internal combustion engines, for cooking or for

lighting. Where it is used the cost is exceedingly high. With an output of more than one, but under two, million pounds, we find five industries of which the two larger are perhaps also of the greatest importance. These are soap and candle and explosive manufactures. These are, of course, intimately connected and interdependent through the by-product glycerine. The export statistics for 1917 show that a very large quantity of "blasting compounds" has been shipped to Europe, but in normal times the works depend almost entirely on the mines as their market. The output of the two match factories is merged with that of the three explosive works. Of the remaining three industries showing an output of over £1 million, namely, printing, brewing, and tobacco, none seems to call for special comment. The eleven groups and industries referred to so far account for £29½ millions, or practically three-quarters of the total gross output of all productive industries. Following these industries come a series of small industries, of which 14, having each an output of over £300,000, produce an aggregate of £6½ millions, and the next 16 industries account for a further combined total of £2¾ millions. Finally, 31 minor industries and a group called "miscellaneous" make up the £1,400,000, which completes the whole, returned as £40,434,882.

SUGGESTIONS TO MANUFACTURERS.

The restriction of British commercial manufacturing and limitation of export, particularly in lines which have in the past been specially regarded as British preserves, have given golden opportunities to commercial rivals to introduce their goods in this market, to obtain a trial of them in spite of the prejudices and conservatism of the consumer, and to obtain much valuable information as to the precise needs of the market and how such goods should be placed on the market, advertised, and distributed.

SELLING ORGANISATION.

It is for this reason that firms which have through war necessities lost part or all of their normal trade with South Africa should in proportion as they have lost trade increase their preparations for after war business by strengthening and improving their selling organisation. They should satisfy themselves that for their particular class of goods they have the best system of distribution, whether an agent working on a commission basis, a salaried representative, a purchasing sole agent, or no agent at all. Manufacturers who have a new product to put on the market after the war or who, not having previously been represented in the South African market, consider that through an agent they could do improved business should take early steps to conclude arrangements for representation. Those firms who have agency arrangements which have proved satisfactory in the past should avoid any possible risk of alienating their agent or dispersing their organisation. That the question of oversea selling organisation and the study of the most economical and effective methods of distribution are of vital importance can hardly be gainsaid. It was by efficient distribution quite as much as by organisation of manufacture that Germany attained to success in the South African market. And the United States, whose share of the South African import trade is now over one-sixth has, during the past three years, spared no trouble or expense in the same direction. That share represents trade done, but it does not indicate the extent to which plans for the future have been laid or selling organisations prepared for future operation. Whatever increase of efficiency in manufacturing we may have learnt during war time we have, nevertheless, to have also efficient distribution or we shall be unable to regain the trade unavoidably lost during the war or obtain our right share of the accumulating suspense orders which will have to be placed as soon as peace is in sight. In connection with the study of distribution it cannot be too often emphasised that the manufacturer must concern himself with his goods until they reach the consumer. There may be economy in the employment even of a multiplicity of highly specialised middlemen. But it is often forgotten that unless middlemen are bound to the handling of particular makes of goods by specific agency contracts they cannot be expected to have any partiality for one make over another, except on the sole ground that it is more readily and more profitably saleable.

CATALOGUES.

Another matter connected with distribution which needs some care is the printing of prices on goods and in catalogues. No doubt this is sometimes done advisedly and after full consideration and consultation. On the other hand, it is also done by oversight or through lack of consideration for its effect in embarrassing the distribution. It may safely be laid down as a general rule that, for export, retail prices should never be marked on goods prior to shipment unless—(a) at the request of, or at least with the consent of, the oversea importer, or (b) as a matter of deliberate policy matured with full knowledge of local conditions and local selling expenses with a view to controlling prices in the interests of increased turnover. It must always be remembered that in sparsely populated areas of large countries the cost of distribution is not comparable with the cost of distribution in older countries. It should not be taken for granted that retail or wholesale margins of profits are extortionate without close study of local conditions.

MACHINERY TENDERS.

Referring to the very important issue of whether specialisation on one class of machine results in a more perfect product for particular purposes than the product of a works specialising on, say, cement-making plant and confining attention entirely to that particular purpose for each particular part of the complete plant. H.M. Trade Commissioner calls attention to the need for considering the difficulty involved in selling overseas when no one of the makers of plant is in a position to draw up a specification or working drawings of a complete plant. It is all very well as regards the home market to rely on getting orders for individual machines or apparatus to take their place in existing factories and works, or to depend on a consulting engineer to do the assembling of ten or a dozen items into a complete specification. It is, however, very far from being an ideal system for oversea business, and very much business has gone to foreign countries just for the reason that manufacturers in so many lines do not profess to know about the manufacturing system as a whole for which they want to supply one part of the plant. In many instances it is almost impossible to arrange adequate representation, or even to interest a representative. The advantages of specialisation on, say, vacuum pans, or drying machinery, may be very great, but the drawbacks are also of sufficient importance to merit study by engineering associations in order to obviate these. Some development of organisation seems to be called for. Possibly firms making pumps, air compressors and machinery could, in relation to each of the various purposes for which their products are used, arrange small combinations of the makers of all different items going to make up a complete plant with a joint drawing office and selling organisation. Possibly firms of structural engineers who already undertake much work of assembling could cover the whole ground of industrial plant more completely and so fill the gap. That there is a gap, anyone who looks into the matter cannot seriously doubt.

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THE POSITION ON THE RHODESIAN MINES.

The Government and the Natives—Interview with Mr. J. G. McDonald.

Mr. J. G. McDonald has returned from a round of visits to the Gold Fields mines and has given details to the *Bulawayo Chronicle* of the situation as he found it in the country districts. Accompanied by Mr. C. E. Parsons, his company's consulting engineer, the following mines and districts were visited: Shamva, Eldorado, Que Que, Gaika, Gwelo, Falcon, Umvuma and Blinkwater. In Salisbury the loss of Messrs. Zealley, Upton and Coxwell was felt very deeply. The epidemic had been well got in hand, however, and a very good organisation established. Through Mazoe the disease was general and Bindura had suffered considerably: among others who died there Messrs. Went and Jardine may be mentioned. The Shamva Mine had turned its club into a hospital, which contained about 25 cases still, while the Government hospital had 20; the disease was, however, abating. At the Shamva Mine the deaths amongst its white employees had been exceptionally light, the only victim being Dr. Hawker, who had overworked himself and been unwell otherwise. An early arrival of Dr. Lister's vaccine is undoubtedly responsible for the low death rate. Native mortality was heavy, however, some 200 natives having died, and many serious cases are still under treatment by Dr. Jackson, who is working at great pressure and doing most excellent work, both for the mine and district. At Eldorado one white employee and the wife of another succumbed. Here again an early supply of vaccine proved of great service. So far native deaths at this mine number about 40. At Que Que the mortality had been rather heavy, the Globe and Phoenix Mine suffering particularly. Fully 20 whites had died in this centre, while the native death rate had been very high, the Globe and Phoenix having lost to date about 250, with a number of serious cases still under treatment. The Gaika Mine lost two white employees and 55 natives—a number of serious cases of the latter are still being treated. Out of a total complement of 450 natives on this mine only five failed to contract the disease. From Que Que to Gwelo the country was all in its grasp, and at Commemara there had been a number of white cases, one of which had died. Gwelo had suffered less heavily than most places, three actual white residents only having died, though a few others brought in from outside districts had succumbed. Native mortality here had been light also. The Mayor (Mr. Bradley) deserves the greatest credit for the way he had prepared against the outbreak. Vaccination has been freely taken advantage of here. At Falcon the first case occurred on the 11th October, and within three days the whole population was in its grip. For some time no vaccine was available and the disease had its own way for a bit. On the mine no fewer than 16 white employees and some 275 natives died, while in Umvuma and Blinkwater 12 whites and some 75 to 100 natives died. Residents in these two places and on the mine speak most highly of the work of Mr. H. T. Brett, who got over an attack very early and for days afterwards he and Dr. Mackay carried the whole burden of the necessary organisation on their shoulders. These two gentlemen and Nurse Varrie saved a large number of lives for the district, and without the Falcon Mine hospital the position here would have been most grave. "Speaking generally," he continued, "the plague had, at all places I have been to, pretty well consumed itself in fourteen days—it had, however, left numbers of serious cases, some of which may end fatally. Quite as many deaths seem to result from toxemia as from pneumonia. The information I have given you so far would take matters on to the 4th of November. In general I may say I found about 90 per cent. of natives that had not been vaccinated were affected on the mines, sometimes more."

"Can you give us some information about the position of the natives outside the mines, Mr. McDonald, and what the Government has been doing for them?" the Pressman asked.

"I can certainly give you some idea of this side of the situation also, and would like it to be made known that from one end of the country to the other the white settlers have done all they possibly could for the natives, several dying from their efforts in this connection, and there has been one constant question fired at me wherever I have been, viz., 'What is the Government doing for the native districts?' Does it not realise the gravity of things?' Well, I tried to find out on the 30th for the many who are interested from the Chief Native Commissioner, and was promised a full statement by the morning of November 1. This has not yet come to hand. I was told, however, that the district native messengers had practically all gone down with the disease and that this had upset things. I was also told that instructions or advice regarding the epidemic had just been printed on leaflets in four different languages, and that these were being distributed, but I have so far seen none of them. Meanwhile to those who have heard of them they are the subject of derision. Practical effort is what was required; it seems to have been badly wanting. The missionaries have been doing splendidly, and we will no doubt be hearing from them in time as to what the Native Department has done; and the elected members are, I understand, going to take the matter up, as no doubt the Resident Commissioner is already doing. Many natives from different districts have stated to me that no assistance has been received from the Government so far. Remember, I make no charge of neglect against the Native Department. It has had terrific difficulties to contend with and has done



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a great deal no doubt, but when an epidemic like this comes along much greater latitude should be given to the District Commissioners. The telegraph service got congested and certain lines went down, and often nothing could be accomplished for days, when, with a reasonably free hand given to District Native Commissioners and their assistants, thousands of lives might have been saved. It should not be forgotten that this epidemic broke out in Rhodesia in the first week in October. We are now well into November, and the whole country is clamouring to know what the Government has done for the native population in the period. Much complaint has been made over the frequent breakdown of country telephone lines, and many scathing remarks made on the now proved disastrous economy of the head of this department. It was suggested that a hospital orderly might sit at central exchanges such as Salisbury, Gwelo, Bulawayo, etc., for an hour three times a day and take down particulars of complicated cases to which a doctor could not be sent. These would be submitted to the M.O.H. and replies sent as soon as possible. I think this merits the consideration of the Medical Director."

"What about native deaths in the kraals, Mr. McDonald?"

"They have," he said, "been very heavy in certain districts, less in others. One small kraal I know of had one solitary survivor, a woman; another the same, but a man! I saw one or two cases of Kafir dogs eating dead bodies, and am told that such have been very common. The Falcon Mine sent out and burnt a number of bodies near the main roads. Most mines suffered severely from desertions due to scare. This figure might be put at 25 to 40 per cent. of the mine complement, and I estimate 12 to 15 per cent. of these will die."

"And what of the Government's Medical Department?"

"I cannot speak too highly of its efforts, its unceasing work and its success. It has done wonders and deserves the highest praise from all of us."

"What would you estimate the death rate for the whole country is likely to be before the disease departs?"

"That I could not give a satisfactory reply to yet, but perhaps 7 to 8 per cent. of the native population and 1½ to 2 per cent. of the white. So far as I have seen, I should think that one white has succumbed to about every 75 to 100 natives. At Faleon it was 1 to 18, at Shamva again 1 to 200, and Gaika 1 to 30. There have been complaints that mortality lists have been kept back for fear of alarming people. This they claim has had the effect of preventing them from realising how serious the disease was."

"Have you any suggestions to offer that might help the country to recover as soon as is possible?"

"Yes, one or two, viz., create depots in three or four centres to collect the hundreds of natives that are wandering about and starving. Feed them and distribute them. The Labour Bureau might well take this on. Urge the Government to do everything possible to assist Wankie Colliery and the railways with labour so as to get coal to all mines using it, for they are the bread earners of the country. If their labour is allowed to drift away, and it cannot be held in idleness, bankruptcy will be the country's fate. Let all Native Commissioners be instructed to help farmers in getting temporary labour for the planting and weeding of their crops. By harvest time things will have become fairly right again. Assist natives with grain, for a great many large native districts are seriously short of food, on condition that if their families are provided for a large proportion will come out to work."

"A final question, Mr. McDonald. Do you think the epidemic has hit the small man very severely?"

"I do, indeed. It has brought stark ruin to many and numbers of small mines will not re-open again for many months, some, I fear, never. People are, however, cheering up wonderfully, and I am convinced the worst is over."

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S.A.R. ANNUAL REPORT.

The Question of Electrification—Control of Shipping.

THE following is the continuation of extracts taken from the report for January-March, 1917, and year ended March 31, 1918, of the General Manager of Railways and Harbours (Sir William Hoÿ), which has just been issued.

Certain members of the Natal mercantile community either do not understand the position in connection with the bunkering trade at Capetown, or they affect to ignore the facts. A prominent commercial representative, speaking at a public meeting recently, said: "If by this means (referring to the dumping of coal) all the coal that the port requires can be supplied promptly—a state of affairs almost unknown hitherto—an opportunity is given to the coal companies to show what they really can do, and when at the end of the war they can point to their increased production, the claim of Durban for recognition as the coaling port of the Union will be so unassailable as to compel even the Government to acknowledge it. The long haul will then become a relic of the past, and steamers will be at liberty to coal at whichever port they wish, instead of, as at present, being compelled to coal at the particular port which is most convenient to the South African Railways."

The claims of Durban as THE coaling port of the Union have not only been acknowledged, but have been constantly advertised and emphasised ever since Union. As I have persistently pointed out, it is the people of Durban, and the coal interests themselves, that have failed to realise the importance of Durban as a coaling station, otherwise they would not have allowed to last so long conditions to which I have drawn attention in this and earlier reports. The commercial representative responsible for the reference to "the long haul" may not realise it, but to adopt the policy he advocates would be the surest means of bringing about the very conditions he seeks to avoid, namely, of compelling vessels either to call at the ports which the coal interests of South Africa dictate, or, alternatively, to avoid South Africa altogether as a coaling station. It seems to be overlooked that, as a carrier, the Administration has to convey the coal to whatever destination it is consigned. The vessels which bunker at Table Bay did not previously bunker at Durban, so that the bunker trade of South Africa has been increased to that extent, to the advantage of the coal interests and the community in general.

When, owing to washaways and other circumstances, the Administration has not been able to maintain a sufficient reserve of coal at Capetown, the Imperial Government has considered it necessary to divert vessels to transport coal by sea both from Delagoa Bay and Durban to Capetown, and I think it will be obvious that at a time of such acute scarcity of shipping, vessels are not likely to be diverted for this purpose unless the Imperial Government is satisfied that there is a bona-fide demand for bunker coal at Table Bay, and unless vessels under Government control can, with advantage, be bunkered at that port. Since the commencement of the war, the Imperial authorities have constantly impressed upon the Administration the necessity for maintaining a large reserve of coal at Capetown for shipping purposes.

LANDING AND SHIPPING WORK AT DURBAN.

The Administration took over the landing and shipping work at Durban as from 1st October, 1917. In October there was an exceptional rush of vessels with general cargo for Durban, and towards the end of that month, and also during November, weather conditions were such as had never previously been experienced in Natal. Some delays inevitably ensued, advantage being taken of the circumstances by certain interested parties to exaggerate and misrepresent the position, and to mislead public and press with regard to the manner in which the work was being performed. With one or two notable exceptions, responsible business men recognised the unprecedented conditions, and the efforts made by the staff to minimise the effects and repair the ravages of the storms, which not only affected the harbour working, but threw municipal and other ser-

vices into confusion, and dislocated the whole railway system of Natal, with prejudicial effects upon the work of the harbour.

EXPENDITURE IN NATAL SINCE UNION.

In view of the frequent reference by public men to the alleged parsimonious manner in which Natal has been treated by the Railways and Harbours Administration, I would mention that since Union, new works—exclusive of individual works costing £5,000 and under, and also of the amount authorised for the new graving dock at Durban—have been sanctioned on the Natal railways and at Durban harbour at an estimated cost of £3,859,000, of which £2,432,000 has been already spent. In these figures no account is taken of the expenditure on new lines and on new rolling stock.

ELECTRIFICATION.

The Administration has secured the services of a firm of eminent consulting engineers in London to report upon the electrification of certain sections of the Union railways. A representative of the firm has already been to South Africa to study local conditions and to collect the necessary data. The question of electric traction has been prominently in view recently as a result of several illustrated lectures delivered in South Africa in regard to the electrification of 440 miles of the Chicago, Milwaukee and St. Paul Railway. The line electrified traverses some rough mountain sections, and engineering difficulties are as prominent and severe as in South Africa.

CONTROL OF SHIPPING.

I dealt in my 1915 report with the growing need for some form of State regulation of shipping and sea freights. Of the many problems to be solved after the war none is more pressing or important, and probably few present greater difficulties and complexities. The international character of shipping complicates the issue. The necessity for control, apparent as it has been for some years, has been accentuated by the war. The question has been frequently discussed, but the apathy of the past is giving place to a more widespread and insistent demand for some form of control and for greater stability of sea freights. Accusations with regard to excessive freights have been rife, and have as frequently been rebutted. Whatever the arguments—and many have been advanced on both sides—I think the public have and will eventually claim the right to demand more effective regulation and control of a means of transport so vital to their individual well-being and to national prosperity. Experience in most countries has demonstrated the need for governmental control and regulation of public utilities. In the railway world the early theories that competition alone afforded adequate safeguards were soon dispelled, and regulations introduced to provide for the control of railway tariffs and facilities. Changes hitherto undreamt of have

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been forced upon us by war conditions, and not for many years may so unique an opportunity arise for introducing reforms under conditions so favourable. Shipping must play an important part in the development and future prosperity of the Union, and the question of the more effective organisation of ocean transport is one, therefore, which intimately concerns the people of South Africa. Other Dominions and other countries have realised the necessity for action. The Canadian Government Special Trade Commission, which visited the United Kingdom, France and Italy in 1916, emphasised in their report that Canada's ocean transportation will have to be completely reorganised if the Dominion is to derive the fullest benefit from her natural resources and manufactures. Imperial control of shipping centralised, say, in London, is suggested, in order to adjust the employment of ships, so that the various needs of the Empire may be met. The American delegate to the International Institute of Agriculture (Rome) was instructed by joint resolution of Congress to bring a motion before the General Assembly of the Institute, inviting adhering Governments to participate in an International Conference to consider the advisability of formulating a convention for the establishment of a permanent International Commerce Commission on Merchant Marine, and on ocean freights, with consultative, deliberative and advisory powers; the Conference to be held in Rome during the fortnight preceding the session of the General Assembly of the Institute in 1917. The proposal was placed before the Permanent Committee of the Institute in February, 1915, when it was unanimously agreed to, and ordered to form part of the programme of the next General Assembly, which has been postponed until the close of the war. The delegate for France said that the United States was taking a direct and effective step towards the solution of a problem which is of the greatest economic and political importance to the whole world. The attitude of the delegates representing Chili and Argentina, which is of special interest to South Africa, was that as these countries did not possess a merchant marine, the question was to them one of exceptional importance, compelled as they were to submit to enormous freight rates for the export of their produce. The delegate for Chili said it was, therefore, of the utmost importance for their economic and commercial prosperity that a neutral ground be found, such as is afforded by the Institute, not only to get in touch with countries which determine freight rates, but where some protection might be found for the interests at stake. He suggested that merchant-marine countries should take into due consideration the situation of those nations which supply the goods to be carried, and also largely supply Europe with her foodstuffs, and with the raw material for her factories.

TIMBER AND AFFORESTATION.

Only very small quantities of imported timber are now available. The shortage of an article of everyday use in practically every branch of industry has led to a general awakening to the supreme importance of afforestation, and has shown very forcibly the possible effect of neglect of the timber industry. But for the foresight of the early settlers, South Africa would have been in a precarious position now. At present South African timber exclusively is used for mine props and matchmaking. It is being utilised in increasing quantities for furniture, coachbuilding, cart and wagon manufacture, for the building trade, and for a variety of other purposes. Since the outbreak of war, timber has been cut in almost every timber district of the Union, and it is essential for the future welfare of the country that a vigorous tree-planting campaign should be initiated to make good the timber which has been felled. Large areas are lying waste which are suitable for afforestation. Tree-planting should not be left entirely to Government. Some years ago the Railways, in order to provide against future needs, embarked upon an afforestation scheme, which is being gradually expanded. The Administration's plantations cover an area of 55,504 acres, of which 23,532 acres have been planted. The plantations have been in existence from six to sixteen years. Some of them are already yielding marketable timber from thinnings, etc., which produce a considerable revenue. The use of South African timber

commercially is capable of great development, and an effort should be made to extend the area under afforestation, so as to provide in time for our own needs. Meanwhile we should be able to make better use of the timber we have available. Much good timber is being wasted which, if properly felled and seasoned, could be used for work for which it has not hitherto been regarded as suitable. The Administration is experimenting with and extending the use of South African timber, which is being used in increasing quantities and varieties for all manner of railway purposes. The principal difficulty in the past has been the proper seasoning of the timber—a work upon which we are gradually profiting by experience. A small seasoning kiln of the steam and hot-air type has been ordered for the Railway workshops at Pretoria. Wood can be seasoned under thirty days by this process. If successful, further kilns will be installed. The dry climate of the high veld, and the many and rapid changes in atmospheric conditions to which rolling stock is subjected, are very severe on timber. Even well-seasoned imported woods which have been long in use at the coast, frequently split within a few weeks of reaching the high veld. With a view to extending and encouraging the use of South African timber, the Administration appointed a small committee of departmental officers to: (a) Systematize inquiries into the question of the better and greater utilisation of South African grown timber for railway and harbour purposes; (b) to collect data regarding (1) utility, (2) purchase, (3) extent of supplies, (4) adaptability of different species of wood for particular purposes, (5) seasoning of timber, (6) tests and reports on different timbers of which samples worked or partly worked shall be kept; (c) determine the purpose, nature and period of seasoning, stacking, cutting, use and manufacture of South African woods; (d) create a common and central bureau of information, with the minimum of correspondence and routine, for the foregoing purposes amongst others cognate to the subject, and to which the Administration can look for advice. The committee is empowered to purchase quantities of locally-grown timber for trial purposes.

MOTOR TRACTION BY ROAD.

Numerous applications have been made for the establishment of motor services in districts distant from the railway. Whilst it has been necessary to recommend that these applications be declined, owing to the unsuitable construction and standard of maintenance of country roads, I realise the disadvantage at which these communities are placed by reason of their isolation from markets. The spirit of enterprise now abroad has extended to outlying districts, many of which, though unfortunately situated in relation to markets and far removed from the stimulating influences of rail communication, are making commendable strides towards development. The opportunities afforded by the favourable prices at present offering for products of all kinds appear to be fully realised in these outlying districts, but a serious handicap is imposed by the absence of reliable transport facilities. In a country like South Africa, in its present state of development, and with but a sparse population in the outlying districts, much useful service could be rendered by mechanical transport, if worked in conjunction with and as an auxiliary to the railways.



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THE WEEK IN THE SHAREMARKET.

Peace, But Not Prosperity.

SATURDAY morning brought no change in prices beyond a turn in favour of Van Ryn Deeps and Modder Deeps. Modder East, which had gone weak overnight, steadied somewhat, but the options remain at a low ebb. Later on the dullness was relieved by a visit from the Empire chorus girls, who entertained the members with music and singing for the benefit of the Christmas gift fund. Apparently their kindly efforts were well rewarded. At the opening on Monday there was just one sale: Lace Props at 11s. 9d., and then the situation was discussed. On call there was more business put through, but mostly in low-priced stocks. Government Areas, Springs, Van Ryn Deeps and New Modders were all easier. The only stocks really in demand at advanced rates being Lace Props and Wit. Deeps. In the course of the forenoon there was active dealing in Lace Props, which brought them up to 13s. 3d. When the hooter went the hall was emptied and business for the day came to an end. The Exchange was, of course, closed on Tuesday. Nothing was done at the opening on Wednesday. The call was dull and featureless, business being again mostly confined to dealings in low-priced stocks. Zaaipplaats had a bad fall. At noon members and their guests assembled in the hall, when the chairman gave an address, followed by the singing of the first and last verses of the Old Hundredth Psalm, God Save the King and the chorus of Rule Britannia. The market was dull throughout the day. A sale of Chartereds at 19s. 6d. was recorded. The market opened quiet on Thursday and the call brought a further fall in values, with few exceptions. The outside dealings for the week were limited to sales of Monteleos, 26s. and 25s. 6d.; Union Tins, 7s. 4d.; Sakalavas, 8s.; Phoenix, 11d. Buyers and sellers: Union Mica, 11s., buyer; Makganyene, 32s. 6d.; Henderson's Estates, 5s.—5s. 6d.

The following are the alterations in quotations on Friday morning:—Sales: African Farms, 16s. 6d.; Geduld Props, 36s. 6d.; East Rands, 5s. 9d.; Knight Centrals, 5s. 3d.; Lace Props, 12s. 6d.; Modder East three-year Options, 5s. 11d.; New Modders, £26 10s.; Kleinfonteins, 13s.; Frank Smiths, 3s. 8d.; Sub Nigels 5s. paid, 11s. 9d.; T.G.M. Estates, 14s. 6d.; New Elands, 25s.; West Springs, 24s. 9d.; Transvaal Consolidated Lands, 25s.; Zaaipplaats, 15s. 6d. Buyer and sellers: Village Deep, 16s.—16s. 6d.; Glynn's Lydenburg, 24s. 3d., buyer.

	Fri. 8th.	Sat. 9th.	Mon. 11th.	Wed. 13th.	Thurs. 14th.
African Farms	17 0	16 9*	16 9*	16 9*	16 6*
Anglo-American Corp.	—	34 0†	—	34 0†	34 0†
Apex Mines	7 3	7 0*	7 0*	7 0*	7 0*
Bantjes Consolidateds	2 4*	2 3*	2 5*	2 6	2 6*
Brakpan Mines	70 0*	71 0*	71 0*	71 0*	71 0*
Breyten Collieries	—	—	10 0*	10 0*	10 6*
Brick and Potteries	—	—	3 9*	3 9*	3 9*
British South Africa	21 0†	21 6†	—	21 6†	21 6†
Bushveld Tins	0 8*	0 8*	0 8*	0 8*	0 8*
Cassel Coals	—	37 6*	38 9*	37 6*	37 6*
Cinderella Cons.	4 6*	4 9*	4 6*	4 6*	4 0*
City and Suburbans	7 6*	7 6*	7 9*	7 9*	8 0*
City Deeps	52 0	51 0*	52 6†	51 0*	52 0*
Clydesdale Collieries	21 0	—	21 6†	—	21 0†
Concrete Construction	6 0†	5 0*	5 0*	5 0*	5 0*
Con. Investments	21 0*	21 0*	21 6*	21 9*	23 0†
Con. Langlaagtes	20 0†	20 0†	20 0†	20 0†	20 0†
Con. Main Reefs	12 3	12 0*	—	12 6	12 3*
Con. Mines Selection	26 0†	25 0*	—	25 0*	—
Coronation Freeholds	1 0*	1 0*	1 0*	1 0*	1 0*
Crown Diamonds	4 0*	4 0*	4 0*	4 0*	4 0*
Crown Mines	£100 0*	£100 0*	—	—	—
Daggafontein Mines	24 6*	24 9	23 9*	23 6*	23 0*
Do. Options	5 3*	5 6*	5 9	5 6*	5 3*
East Rand Coals	2 1*	—	2 2	2 2*	2 2*
East Rand Deeps	—	0 10	—	0 11*	0 11*
East Rand Minings	19 0†	19 0†	18 0*	18 0*	18 0*
East Rand Props	4 9	4 9*	5 0	5 2	5 3*
Eastern Golds	1 6†	1 5*	1 9	1 7*	1 8*
Ferreira Deeps	14 0†	—	—	14 0*	—
Frank Smith Diamonds	3 9†	3 9†	3 8†	3 8†	3 8†
Geduld Props	37 0	37 0	37 0	37 0a	36 6*
Glencairns	1 3*	1 3*	1 3*	1 3*	1 3*
Glenroe Collieries	—	—	6 0*	6 0*	6 0*
Glynn's Lydenburgs	23 0*	23 0*	23 0*	23 0*	23 0*
Union Corporation	15 0*	—	—	—	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri. 8th.	Sat. 9th.	Mon. 11th.	Wed. 13th.	Thurs. 14th.
Government Areas	90 6*	91 0*	90 3	90 3	90 0
Jhg. Bd. of Executors	27 6*	27 6*	27 6*	27 6*	27 6*
Jupiters	4 3*	4 6*	4 9*	6 0	5 3
Klerksdorp Props.	3 0*	3 0*	3 0*	3 0*	3 0*
Knight Centrals	5 0	4 10*	4 10*	5 1	5 1*
Knights Deeps	5 6*	—	5 6*	5 6*	6 3*
Lace Props	11 9	11 7*	11 10	13 0	12 3*
Leeuwpoot Tins	31 0	29 6*	30 3	30 6†	29 0
Lydenburg Farms	8 9*	8 9*	8 11	8 9*	8 9*
Main Reef Wests	2 3*	—	—	—	—
Modder B's	162 6†	160 0	160 0	157 6*	157 6
Modder Deeps	147 0*	149 0	149 0	148 0*	148 0*
Modder Easts	20 4½	20 3	20 1½	20 3	20 4½
Modder Opts. (3 years)	5 11	6 0	6 0*	5 10*	5 9*
Modder Opts. (4 years)	6 9*	6 6*	6 7*	6 9*	6 9*
Hume Pipes	32 0*	32 3*	32 0*	32 0*	32 0*
Natal Navigations	20 0*	—	—	20 0*	19 6*
National Banks	—	—	—	—	£14 10†
New Boksburgs	0 10*	0 10*	0 10*	0 10*	—
New Eland Diamonds	24 0*	24 0*	24 0*	24 0*	23 6*
New Era Cons.	10 0*	10 1*	10 0*	10 0*	10 3
New Geduld Deeps	5 8*	5 8*	5 9*	5 9*	5 9*
New Heriots	12 6*	—	12 9*	12 9*	12 6*
New Kleinfonteins	12 9*	12 6*	12 6*	12 9*	12 6*
New Modderfonteins	537 6	540 0†	537 6	530 0*	535 0†
Nigels	4 6*	—	4 6*	4 6*	5 0*
Nourse Mines	17 0†	17 6†	17 6†	16 0*	16 0*
Pretoria Cements	70 0*	70 0*	70 0*	71 0†	70 0†
Princess Estates	3 1	3 0*	3 1*	3 1*	3 0*
Rand Collieries	3 3*	3 6†	2 6*	3 0†	3 0
Rand Nucleus	1 5	1 4*	1 5	1 4*	1 5*
Rand Selection Corp.	82 0*	—	—	—	80 0
Randfontein Deeps	5 1*	5 2*	5 3*	5 9	5 9
Randfontein Est.	15 6*	—	15 6	15 0a	—
Rooibergs	10 0*	10 6†	9 9*	9 9†	9 0*
Ryan Nigels	3 0*	3 6†	3 3*	3 3*	3 3*
Shebas	1 0	—	—	—	—
Simmer and Jacks	—	—	—	—	6 6†
Simmer Deeps	2 0†	2 0†	2 0†	2 0†	—
S.A. Breweries	34 0†	—	—	—	—
S.A. Lands	6 3*	6 4*	6 5	6 6*	6 7
Springs Mines	69 3	69 3	69 0*	69 6	69 3
Sub-Nigels	27 6	27 6*	27 3*	27 9*	27 3
Swaziland Tins	31 6†	31 0†	—	31 0†	—
Transvaal Lands	22 6*	23 0	22 6*	24 0*	24 3*
Trans. G.M. Estates	14 0*	14 0*	14 0*	14 0*	1 7
Van Ryn Deeps	70 6*	71 0	70 6*	70 6	70 3
Village Deeps	15 0*	15 0*	17 0†	15 0*	17 0†
Village Main Reefs	—	—	15 0*	—	—
Van Dyks	—	—	2 6†	—	—
Welgedachts	30 0†	—	—	25 0*	27 6†
Withank Collieries	51 0*	—	50 0*	—	—
Witwatersrands	—	—	20 0†	—	17 0*
Wit. Deeps	13 3	13 0	14 6	13 0*	13 9*
Wolhuters	3 3	3 0*	3 2*	3 2*	3 3*
Zaaipplaats Tins	16 0*	16 1*	16 1	15 6	15 4
Union 5 per cent.	£102 5	£102 0*	£102 0*	£102 2½*	£102 0*
New States	20 3*	20 3*	20 4½	20 6a	20 3*
South Van Ryns	12 9	12 9	13 0	12 9	12 7*
S.A. Alkali	46 0*	46 6*	46 6	46 0*	46 6*
West Springs	24 9*	25 0	24 7½	24 6*	24 6*
West Springs Options	11 0*	11 0*	10 9*	11 0	11 0*
De Beers Con.	£16 0*	£16 10*	—	—	—
De Beers Prefs.	—	—	£14 0*	—	—

Rooiberg Minerals.

The following is the Rooiberg Minerals Development Co.'s return for October:—Tons treated: Ore, 2,809; slime, nil. Concentrates produced, 35 tons. Expenditure, including realisation charges and exploration, £6,026; revenue, £7,302. The mill ran on Blaauwbank ore only.

New Kleinfonteins.

Appended are details of the operations on the property of this company for the month of October:—Stamps, 165; days, 26; tube mills, 8; tons milled, 52,820; gold recovered, 17,231 fine ozs.; net value, £71,571; profit, £62; working costs per ton (exclusive of development), £1 4s. 3d.; development to working costs per ton, 2s. 10d.; total working costs per ton, £1 7s. 1d.; capital expenditure, £2,159. Operations were seriously affected by the epidemic of Spanish influenza, from which a very large proportion of the staff, both white and native, suffered during the month. It is anticipated that the results for November will also be affected.

PROGRESS IN ACCIDENT PREVENTION.

THE development of the science of accident prevention in America within the last five years has been summarised in a single phrase, "Nothing is so valuable economically as the man." Outlined briefly, the following have been found to be the essential features of accident-prevention work:—

1. To ascertain the actual conditions of risk under which employees perform each task and to determine the most practicable methods of eliminating or reducing this risk.
2. The provision of proper working conditions and of efficient safeguards for dangerous machinery and appliances.
3. Careful selection, instruction and supervision of workmen, and their assignment to work for which they are best suited.
4. The promulgation and rigid enforcement of necessary rules for safeguarding.
5. The inculcation of habits of caution in the minds of all concerned.

Actual conditions of risk, five years ago, were usually summarised as follows: Industrial accidents, fatal, one every four minutes; non-fatal, one every four seconds. Only male workmen were taken into account, and no reference was made to the many women and minors engaged—probably because no statistics were available. Elimination of risk has not been achieved or even approached, but a start has been made, approximating reductions of 15 per cent. in fatal and 40 per cent. in non-fatal industrial mishaps. Members of the National Safety Council who have carefully compiled statistics covering the five-year period report even more satisfactory totals, a few declaring reductions for both fatal and non-fatal classifications of 65 to 85 per cent.

MODERN INDUSTRIAL METHODS AND STANDARDISATION OF SAFEGUARDS.

The attempted achievement of proper working conditions and the standardising of safeguards on dangerous machinery and appliances have revolutionised modern industrial methods, particularly when applied to plants engaged in "quantity production." Starting with the fundamental principle of installing only safe machinery and equipment, plant managers demand of machine builders that every guard of known merit shall be incorporated in the design of the machine. In the present-day workshop the executive strives to embody in every operation, beginning in the drafting and planning departments, provisions for safeguarding his workmen. The purchaser of a crane, for example, can now secure a completely appointed device—fully as efficient as any previous model, plus a full complement of guards. Manufacturers of woodworking devices have gone further, probably, than any other group of machinery designers, and shapers, jointers, saws and planers are usually fully protected. The same may be said, varying only in degree, for the manufacturers of lathes, cutting, stamping and boring machines commonly found in workshops of every character. In the operation of such machinery, however, plant executives, even through the most careful supervision, have not succeeded in achieving entire elimination of work accidents. In older installations the safety engineer and department foremen are relied on to design and fabricate most of the guards. Certain large industries have systematised the designing, building and installation of guarding devices by turning the work over to a special department, and men engaged in this work are not called upon to take part in production. Remarkable results have been achieved, but as yet, although records in accident prevention show reductions of 85 per cent., no safeguard, however elaborate in design and efficient in operation, is claimed to be "fool proof." Accidents still occur, though happily in decreasing number.

INITIAL TRAINING SHOULD BE IN HOME AND SCHOOL.

Careful selection, instruction and supervision of workmen and the assignment to them of work for which they are best suited, may be said to start in the home rather than

in the factory, workshop or mill. Education in safety begins with the parents, continues in the schoolroom, and finally reaches the employment manager or foreman. A score of American cities have attempted civic safety work, notably Rochester, N. Y., where a campaign of education embracing every phase of home, street, public and industrial accident prevention is being carried on. Thousands of educational bulletins, changed weekly, have been printed and displayed, and the lessons have proved of intense interest. Scenes familiar to every citizen of Rochester have been utilised to drive the lesson home, and it is a safe prediction that the campaign will prove of lasting benefit. Special series of safety bulletins are available for use in public schools, and in many communities these are proving valuable aids to teachers in safeguarding pupils to and from their homes. Primary lessons in crossing streets, avoidance of traffic accidents, safety at play and in the home are taught in the lower grades, and in the advanced grades more comprehensive lessons are offered.

SCIENTIFIC COURSE FOR STUDENTS.

Carrying the idea to a logical conclusion, a national committee is now at work formulating a scientific course for students of technical schools and universities. The need for such a course is emphasised by the establishment in Western Pennsylvania of a private course in safety engineering, under the auspices of a local branch of the National Safety Council, the industries being unable to secure a sufficient number of technically educated men to fill the positions awaiting such engineers. Supervision, whether in production or in accident prevention, is one of the most important of industrial problems. In safety work it has often been said that "without the whole-hearted co-operation of the foreman, all efforts in accident prevention must fail." Adopting the experience of safety engineers, it has been found advisable, if not imperative, to enlist the services of the general manager not only in enforcement but in every stage of preliminary planning. This secured, the executive staff accepts as the policy of the establishment the slogan, "Stop the Accidents," or, as more popularly phrased, "Safety First." The management, the planning staff and the foremen working in unison, the employment manager is next in line for conversion to the movement. This is well emphasised by the present plan in certain large industrial plants of charting every position in the works and the acceptances by the employment managers of partly incapacitated men or women for lighter service. The plan, too, has worked well in returning injured men to work. Men incapacitated because of injury to a lower extremity are found suitable places. The promulgation and rigid enforcement of necessary rules for safeguarding have worked out in actual practice to an advanced stage of mutual co-operation. Success in drafting shop rules for accident prevention has been attained when shop safety committeemen serve on boards organised for the formulation of accident prevention standards. In fact, next to the general manager and his superintendents, the members of the shop safety committee are the most valuable safety boosters in the plant.

SAFETY RULES AUGMENTED BY BONUSES.

Safety rules are often augmented by bonuses, prizes and rewards of various kinds, and these serve to inculcate the habit of caution in the minds of all concerned. That "the best safety device known is a careful man" is an aphorism of proved merit. Discipline has its value, but watchful care must be exercised to prevent foremen from confusing discipline with peevishness or "nagging" of workmen. Prone to follow precedent in operation, though excellent in maintaining discipline of a sort, is destructive to best results in safety work. Change of process, equipment and operation calls for complete revision of method, and gradually habits of personal caution and conscientious observance of safety standards are revising experience tables of lost-time mishaps.—From *Engineering and Mining Journal* of New York.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

**Cancelling Orders—Peace Rejoicings Suspending Operations—Buildings Quieter—
Oils and Colours—American and British Shipping—The Future: Nothing Done—
Second-hand Materials.**

THE town has been all agog with the great peace excitement on Monday afternoon, when the streets were taken by storm, so much so that the tram traffic had to be diverted from Eloff Street to Market Street. The hundreds of motor cars, loaded with shouting humanity, and the waving of flags were truly wonderful. The Tuesday's holiday was also good, but Monday was the day of days for rejoicings and excitement. Hence it is not surprising that business was practically suspended until Thursday, and even then no one seemed inclined to do anything. The outstanding features were that all the various trades seemed waiting for a lead from any prominent man; this was lacking. A representative of a British manufacturing firm with large offices here cabled not to export any more material at present, as it was only natural that the mines would commence using from their immense reserve stocks and stores, therefore it were better to wait until definite indications were received from that source. Another pointer was that a gentleman received a cable on Wednesday from a London firm stating it was willing to close for two mineralised farms, negotiated for about three months ago. An indicator was looked for from the Stock Exchange, but that also was as dull as ditch water, simply waiting for a lead from London. For all concerned it is satisfactory to note that the influenza epidemic is practically over, which should make an improvement in the gold output in the future.

TIMBER AND BUILDING MATERIAL.

There were only a few enquiries during the armistice excitement, but a slight improvement is expected next week. Values of timber are unaltered, but the Swedish cables, the few available, are easier in the Exchange and more shipping seems to be offering. Although there is quite a fair quantity of buildings in progress, yet contractors do not think there will be many new jobs started until after the end of the year, which is in general accordance with the happenings of previous years at this season. Bricks are the same price, but without inclination for alteration in values either way; but owing to the fine weather of late stock bricks have become more plentiful. And also wire cuts and pressed bricks are now more freely obtainable. Lime is plentiful, but cement is on the scarce side.

OILS, COLOURS, WHITE LEAD, ETC.

There is no alteration in prices. However, in the wholesale line practically nothing is doing, as the absence of buyers is most marked and tantalising. People seem to be

talking things down, but there are no bargains offering, and against this a merchant who has a twenty thousand pounds order in London cabled to send it out quickly. Most of the things mentioned on the order were prohibited from export previous to the armistice, and now it is hoped that the British Government's ban may be taken off. This authoritative statement as to such an order being cabled for shows the confidence in our market values, but it must be mentioned that the price of the goods is that current when handed over in Britain for shipment.

SHIPPING.

According to an American shipper, the freight market is a bit too free, as there are twenty sailing vessels and twelve steamers loading and on the way at the present moment. The opinion of that gentleman is that in the absence of submarines the freight market will come down to anything up to 20 per cent. Another opinion expressed, based on this week's cable information from America is that the (Johannesburg) market need not be unduly alarmed about values, as the world's markets are short of goods generally, and raw cotton actually rose 8 cents when the armistice news became known. The shipper in question placed great stress upon the fact that the Central Powers will have to be fed and clothed, for a time at least, and this never entered into anyone's calculations before.

BRITISH SHIPPING.

This matter was fully referred to in last week's issue. It said, "then comes the point as to what the British Government will do with the thousands of ships under its control." Reuter's message gives the following answer: "London, Tuesday.—The Shipping Controller announces that the Government control of merchant shipping will not continue after the war longer than is necessary to provide for the extraordinary conditions arising out of the war. Privately-owned ships will be released as soon as the tonnage available is considered sufficient to provide for the essential national shipping services."

THE FUTURE.

The question of the future of trade and manufactures is the absorbing topic of conversation throughout commercial circles, therefore it cannot be ignored in these notes. Having heard that the furniture manufacturers were having a meeting to see what could be done towards getting protection or assistance, as against the dumping of oversea

goods, etc., a visit was made to the secretary of the Chamber of Commerce, who has not received any instructions for meetings or committees in reference to the future trade conditions. The secretary said that nothing could be done until the next session of Parliament. In the meantime he thought the extra wages in Britain, the extra cost of raw materials, freight, etc., will have to suffice for the present for all South African manufacturers. This may, or may not, be the correct reading of the matter, but seeing different associations have been formed to recommend South African manufacturers to spend their time and money, it seems a pity that hardly a word has been heard lately, and now peace has almost suddenly come upon us—we have done nothing. Perhaps nothing can be done, but it would be the more satisfactory if such an important matter was taken in hand by the commercial authorities assisted by our Members of Parliament, and so have the matter thrashed out as an object lesson if nothing more. There are such subjects as free trade, protection, and bonuses for long or short periods, as well as dumping. In a measure all these things are good and should be applied as the various circumstances and environments suggest or permit.

SECOND-HAND MATERIAL.

This is very similar to new goods, being in a state of suspended animation during the armistice rejoicings. Second-hand steel plates have been offered at £20 per ton, instead of £27½, delivery in Johannesburg. A dealer who was asking £20 for a parcel of second-hand pipes at the beginning of the month, offered to take £10 on Wednesday. A dozen train trucks were sent to the East Rand district, but the price did not transpire. Very few enquiries have come to hand from the country districts, where evidently they are biding their time for a little while.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 2s. to 2s. 1d.; flooring, 4½ x ¾ and 6 x ¾, 11½d. to 11½d. per sq. ft.; ceilings, 6 x ½, 7d. to 7½d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, ½in. x 12in., 1s. 4d. per foot; lin. x 12in., 1s. 8d.; teak, 25s. to 27s. 6d. per cubic foot; shelving, 1s. 3d.; Jarrah, 14s. 6d. cu. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 1s. 11d. to 2s. per ft.; beaver boards, 11d.; galvanised iron, 24-gauge, 6ft. to 10ft., 2s. to 2s. 1d.; 11ft., 2s. 2d.; 12ft., 2s. 3d.; 26-gauge, 6ft. to 8ft., 1s. 9d.; 9ft. and 10ft., 1s. 10d.; flat galvanised, 24 and 26-gauge, 95s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 50s.; and 3 ply, 55s. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

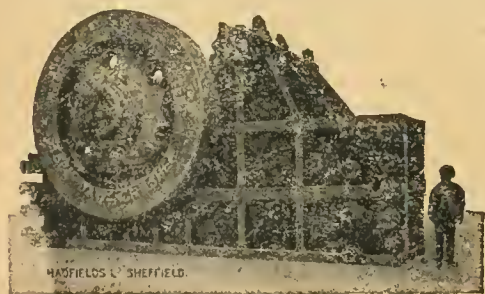
OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s. 2¼ 1-5 galls.; 10—1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ¼in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 2loz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2¼ I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 1lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton;

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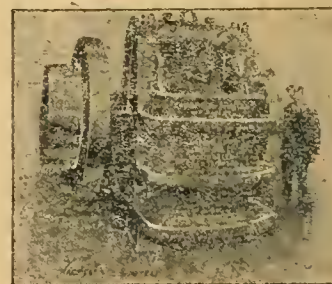


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litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 50s. to 55s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3¼in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ¼in. and 3-16in. round iron, 95s. to 100s.; ¾in. do., 85s.; ½in. steel, round, 80s.; ¼in. round iron, 85s.; do. steel, 72s. 6d.; ¾in. round iron, 72s. 6d.; do. steel, practically none in town; ¾in. round iron, 65s. to 67s. 6d.; ½in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunswart local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ¼in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 1s. 9d. lb.; ¾in. dia., 1s. 6d., 3¼in. and up long 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb.; ½in. dia. and 2½in. up long, 75s. per 100lb.; ¾in. diameter up to 2½in. long, 85s. per 100lb.; ¾in. dia. 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 55s. 100 lb.; ¾in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in. 95s.; 1½in. and 1¾in., 85s.; 1½in. to 1¾in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ¼in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ½in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction kinoxite, 11d. to 4s. and special prices per lb.

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His many friends on this side of the water will be glad to hear that Mr. A. F. Brigham, formerly General Manager of the New Jagersfontein mine, has been appointed General Manager of the Dome Mines in Canada.

Electric Dust Precipitation.

According to a paper to be presented to the American Institute of Mining Engineers by Mr. O. H. Eschholz, research engineer of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., although the commercial success of electric cleaning of gases from flue dust depends on the development of electrical units, particularly of transformers, the average first cost of electrical equipment is such a small part of the total cost (about 10 per cent., and in rare cases 15 per cent. of the cost of the treater), and the value of the recoveries is so large, that the tendency is to develop rough and ready electrical apparatus to insure continuity of service rather than apparatus of low first cost. The value of the yearly recovery from average installations he estimates as being at least from 150 to 600 per cent. of the total first cost, depending on the type of construction required and the character of the material precipitated. Rapid progress is being made in the control of the disturbing phenomena which are inevitable with high voltage operation. This voltage, he maintains, is not as large as is sometimes put forth, and it is his opinion that very few commercial treaters are operating above 60,000 volts. The synchronous contact maker or mechanical rectifier, he adds, permits operation within a few per cent. of the critical voltage of the treater and prevents short circuits.

Company Meetings.

MAUSS SEPARATOR.

The fifth annual general meeting of the Mauss Continuous Centrifugal Separator, Limited, was held in the offices of the company at Cullinan Buildings, the chairman of the company (Mr. J. M. Buckland), presiding 6,325 shares were represented out of a total of 11,635.

In moving the adoption of the directors' report and accounts, the chairman, after reviewing the financial position of the company, said:—Gentlemen,—After another year of expectancy, it has to be recorded that war conditions still militate against the commercial exploitation of the value of your assets. But although the war has prevented us from advancing with the manufacture and sale of the machines in the great markets of the world, that period of enforced inactivity has been not unprofitably employed in research, in the development of new inventions, and in practical trials of the different designs. Your patents are not now mere inventions still awaiting trial. You have now practical working machines. You are now possessed of three distinct centrifugals, which although each of them is useful in many industries, I will for convenience refer to as the "tin," the "alkali," and the "sugar" separators. The first is especially adapted to metallurgical separation. It consists essentially of two bottomless buckets or vertical cylinders revolving rapidly in a frame around an upright spindle. Each of the buckets has also, like a planet, an independent slow revolution on its own axis. The special achievement of this machine in connection with tin slime has been to bring this hitherto intractable pulp into a condition in which its metallic contents can be easily recovered. The pulp to be separated is fed into each bucket against its outer wall, i.e., the point furthest from the central spindle. The centrifugal force generated by the revolution of the whole frame packs the solid matter of the pulp against the wall of the bucket, the fluid flowing over the rim or lip in the same way as in any ordinary cream separator, carrying the colloids with it. The slow revolution of the bucket on its own axis continually carries away the clean and dry solids packed against its wall, from the point of feed, so that a fresh face is constantly exposed to the feed flow. The packed solids are carried around in the bucket until they arrive at the inner wall, or the point next the central spindle. Here the centrifugal force which at first packed them against the wall exercises a reversed effect, and disengages them, so that they fall down and out into any convenient receptacle.

Tin Metallurgy.

Hitherto tin slime has presented to the metallurgist an insoluble problem. The fine metallic particles cannot be separated out by any of the existing concentrating devices, and hundreds of thousands of tons are being run to waste, while still bearing a high metal value, a value approximating to the original gold values of the ore of some of our Witwatersrand working mines. One of our discoveries is that the reason for this comparative failure in tin metallurgy is the mechanical hold of the colloids on the metallic particles. These tiny fragments

are entangled in the colloidal constituents of the slime so firmly that the ordinary methods of gravity concentration, which depend on the simple differences in specific gravity between the different constituents of the pulp, do not suffice to disengage them. But this application of centrifugal force multiplies hundreds of times these differences, which become so wide that the metallic particles tear themselves free from the colloids, and pack themselves on the wall of the bucket, with the solid or crystalline contents of the pulp, constituted with them a clean product highly amenable to concentration. The complete industrial unit is one of these centrifugals linked up with a number of vanners or concentrating tables, and the recovery in good practice is from 66 per cent. to 80 per cent. of the original contents of the slime, which would otherwise be worthless.

Result at Zaaipiaats.

The machine has been working with brilliant results at the Zaaipiaats tin mines, the capacity being about 25 tons in 24 hours. Unfortunately war conditions have interfered. Some of the smaller parts are made of high-grade steel, and when these came to be replaced, which replacement under ordinary conditions would take a few hours, we found we could not get the steel. We had to send to Scotland for the parts, and even there a permit could not be got. Recently, however, though the good offices of the Chamber of Mines Committee, who made special recommendations in view of loss which the Zaaipiaats tin mines were suffering in slime running to waste, we have obtained the necessary certificate. Messrs. Duncan Stewart and Co. write us that they have the steel, and we may hope to have the centrifugal at work as soon as the parts can be shipped. The commercial value of this machine has been completely proved. If the Tin and Tungsten Research Commission in England had seen its way to give the machine priority, and to allow of its being brought into use in Cornwall, an increase of very great value, and of imperial importance, would have already taken place in the output of tin in the British Isles.

Alkali Separator.

The second, which may be distinguished as the "alkali" separator, is essentially a centrifugal filter, differing from all previous types in that the charging of the pulp and the separate discharge of the fluids and solids take place in cycle and automatically during the uninterrupted revolution of the filter. The perforated separation basket or drum revolves horizontally around a vertical spindle, and consists of two hollow and flattened cones brought together at their bases. The cycle of operations is this: The pulp is fed into the closed revolving basket, and the fluid at once discharged through the perforated walls into an external launder. So soon as the extraction of the fluid is complete the drum is lowered about three inches so as to bring it on a level with a lower receptacle. The drum then opens by the parting of its two halves, and the solids are instantaneously expelled into the second receptacle. The piston then reverses its action, closing the drum and raising it to its original position, ready to receive a new charge. The various movements of the machine in cycle are secured by a most ingenious

and highly flexible mechanical device, and can be varied in time to suit the material to be treated. In practice it is found to be perfect, and no one who has seen it at work can fail to be impressed by the smoothness of its running and the striking freedom from friction on any of its wearing parts. The machine has achieved results which experts in many spheres of industry have long been aiming at in vain, especially in those processes where intermittent centrifugals, or filter presses or filters, or decantation methods are now in use.

In connection with the separation of alkali, it is found in actual work to be very effective, having a capacity for producing about 5 to 7 tons of crystal per day. It is singularly adapted to this industry, for it lends itself most conveniently to those operations of "fractional crystallisation," in which the various salts in a solution crystallise out separately at different temperatures, such as solutions of common salt and carbonate of soda or those complicated by the presence of perhaps gypsum at one end and the more soluble potassium or soda salts at the other. Two of these machines have been running at the works of the South African Alkali, Ltd. Their performance has been so satisfactory that we have received an order for a larger number, the manufacture of which will take several months.

Purification of Sugar Mill Juice.

The third machine, which is perhaps the most valuable of all, is especially adapted, in the manufacture of sugar, to the rapid purification of the mill juice. This juice has to pass through a number of appliances, clarifiers, eliminators, filter presses, etc., before it is in a clear condition fit for the vacuum evaporators. The processes are slow and expensive, some are designed for the separation of heavy earthy and vegetable matters, some for the light waxes and so forth, whose specific gravity scarcely differs from that of the syrup itself. This separator carries out these processes at a single stage. It attains in a few moments, partly by filtration and partly by decantation, the results of processes which are now protracted over hours. The importance of this lies in the fact that the juice is extremely liable to destructive fermentation. Even in the most modern plants, even whilst being limed and sulphured, the juice on its slow way from the crushers to the quadruple effect evaporators, starts fermenting. The ferments or yeasts multiply with astonishing rapidity, and give rise to masses of slimy matter, which are virtually insusceptible of any treatment. The present processes, then, involve delay, expense and the loss of an appreciable percentage of sugar. This is the bugbear of sugar engineers, the black spot in sugar milling. The use of this machine brings about a rapid and uninterrupted flow of the juice to the vacuum pans. It saves time, it prevents all danger of fermentation, and it avoids loss of sugar. There is a very urgent demand in all sugar milling countries for such a machine. It is, of course, easy to be too sanguine, but our opinion is confirmed by that of American experts, that the results to be attained by the introduction of such a machine are of almost incalculable value. Sugar is now manufactured at the rate of over 20,000,000 tons a year. Over that vast field this separator will reduce the cost of production. It will make a material increase in the total output of one of the most necessary of foods.



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Manufacturers' Difficulties.

We are now in negotiation with South African manufacturers of sugar for the installation of the machine, and we hope to have it at work before the close of the present crushing season. Unhappily, the moulders' strike has come upon us just at the moment when it is most urgent that the manufacture be pushed forward. Unless that comes soon to an end, we may have to abandon our hope of having the machine manufactured in South Africa. These machines as a group constitute an important advance in mechanics. They embody new ideas, ingenious, fertile ideas in the scientific utilisation of centrifugal force. It would have been a legitimate source of gratification to shareholders to know that they had not only been invented and perfected, but had also been manufactured in this country.

We have recently endeavoured to arrange for the manufacture of the planetary or tin machine in America, but war needs are imperative and insistent there to a degree of which few persons in this country have formed any conception. Although, however, the manufacture cannot yet be undertaken by those overburdened shops and factories, the design of the

machine aroused the keenest technical interest wherever it was mentioned. The necessary metal cannot yet be obtained, but one or two large firms have expressed a desire to interest themselves in the business, and we have received an application from probably the largest iron-works in the Western States for exclusive rights of manufacture and sale over certain territories. Some of the best informed engineers in America have pointed out to us the usefulness of the machine in the purification of town sewage, the separation of molasses from sugar crystals, the clarifying of mine sludge, and a number of other industries. But one most important field is in that miscellaneous group of industries whose factories are generally known as "chemical works." There is, it appears, scarcely one of these vast establishments in England or America, in some of whose processes one or other of our separators will not be required to replace more wasteful and slower methods.

Business Opportunities.

So soon as the clouds which at present obscure our advance have cleared away, your directors are confident that there will be ready markets for great numbers

of your machines. In the great expansion of normal industries which necessarily accompany the reconstruction of Europe, they will find numerous and most varied fields of usefulness. Whether that come at once or be deferred for months, your directors wish to impress on you the need of your being financially prepared for it. Hitherto we have not been able to spend any money on the business side of our undertaking. Indeed, remembering that we had to expend over £3,000 in mechanically embodying the first idea with which we started, it may almost be said that we have advanced to our present stage without money, for spread over five years our expenditure has been insignificant. But the policy of rigid economy will serve us no longer. That will not carry us on when we have to push the manufacture and sale of our apparatus in the busy and competing markets of the world. Your directors will therefore, after the close of this meeting, bring a proposal before you as a preliminary step towards that energetic propaganda which we hope will almost at once be rendered necessary by the business opportunities that await us on the restoration of peace. The resolution was adopted unanimously and the retiring directors were re-elected.

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Notes and News

One of the most successful meetings in the history of the S.A. Institution of Electrical Engineers was held on Thursday evening, when the Minister of Mines, Mr. Malan, presented the gold medals of the Institution for 1915 and 1916 to Prof. Dobson and Mr. Bernard Price respectively. Among a distinguished audience were the President of the Chamber of Mines, the Secretary for Mines, and representatives of the other technical societies. In making the presentations, Mr. Malan took occasion to compliment the Institution on the excellent work it had done during the war in the direction of promoting research and local industries. He also paid a tribute to the work of Sir Evelyn Wallers in bringing employers and employed together. In felicitous little speeches Mr. Price and Prof. Dobson expressed their thanks for the high honour conferred upon them. A vote of thanks to Mr. Malan was moved in an eloquent speech by Mr. du Pasquier, seconded by Prof. Buchanan. Mr. R. A. Innes then read an interesting paper on hail and hailstorms, the point of which was that no case had been made out for the adoption of any of the known artificial methods of preventing destructive hailstorms. Mr. Kirkland in appreciative terms moved a vote of thanks to Mr. Innes, which brought a most successful meeting to a conclusion.

* * * *

The following cable was despatched to the London office on November 16: "Following are sampling **Crown Mines.** results of the Main Reef Leader on the 19th level south of dyke 7th shaft: Width of reef sampled 8 inches, assay value 84 dwts., inch dwts. 672. Above represents average of 4 sections in the cross-cut." The reef was intersected in the cross-cut 180 feet vertically below the point of intersection by a borehole sunk south of the dyke.

* * * *

The following cable has been received from the London office of the Consolidated Gold Fields **The "Goldfields" Year.** regarding the company's operations for the financial year ended 30th June, 1918: "The realised profit on the year's operations subject to audit is largely derived from dividends received on investments, and after deducting debenture interest and all outgoings shows a balance to credit of £412,539 15s. 8d., from which the dividends on the first and second preference shares, French, South African and American Government taxes have been provided, leaving £257,497 5s. 3d. To provide for the depreciation at the close of the financial year of £388,348 6s. 9d., which is almost entirely due to the fall in market prices of Simmer and Jack Prop., Ltd., Knights Deep, Ltd., and Robinson Deep, Ltd., shares and also for the provision for contingencies hereafter referred to of £317,459 4s. 10d., the directors have utilised the whole of the reserve of £600,000 by transferring the same to the credit of profit and loss account, the balance £105,807 11s. 7d. being provided out of the profits of the year, leaving £151,689 13s. 8d., which, adding the sum of £58,405 5s. 11d. brought forward from last year, leaves £210,094 19s. 7d. The directors have deemed it prudent to make this further provision in face of the uncertainty regarding the period during which a high rate of working costs will be maintained and also of all the other adverse circumstances which have affected the above low-grade mines since the close of the financial year. They have had no hesitation in adopting this course in view of the fact that the company's investments show at current market prices and on a conservative estimate of unquoted investments an unrealised profit considerably over £1,000,000. The directors recommend that a cash dividend of 7½ per cent. free of income tax be paid on the 2,000,000 ordinary shares, amounting to £150,000, leaving £60,094 19s. 7d. to be carried to credit of current year's profit and loss account." The annual general meeting of shareholders has been fixed for Thursday, 5th December.

The *Austral-Briton*, a monthly paper published in Sydney, says: "Apropos of that deadly scourge, miners' phthisis, we learn on excellent authority that a Chinese herbalist, who is related to the Premier of the Celestial Republic, has discovered a positive cure for phthisis, which is also effective in lessening the distressing ravages of the dust type of that dreadful disease of the lungs. We are not at present permitted to publish details, but are hopeful of making a definite announcement shortly."

A Cure for Phthisis?

The strike of members of the Amalgamated Society of Engineers at the Jagersfontein mine terminated last week. The mining company agreed to continue paying employees the old rate of war bonus, namely, 12s. 6d. per week, as requested by the strikers, and went further by increasing the bonus paid to other workers. Now all employees receive the same amount. The management also agreed to recognise the Mineworkers' and Engineers' Unions. The strike lasted one week.

Jagersfontein Strike.

When the resolution for liquidation was withdrawn by the New Rhodesia Mines last year, and the decision taken to hang on, it was hoped that the position of the company would improve. Owing to the war this has not happened yet, and the debit balance is increased from £83,681 to £35,505. The Kameel mine seems to be given up as hopeless, and the machinery has been sold. Apparently the company now depends mainly upon a Porcupine property, where an encouraging development has taken place, but which is, so far, not sufficient to do more than raise hopes.

New Rhodesia Mines.

The article by Mr. B. L. Thane in the *Mining and Scientific Press*, from which we quoted last week, is summed up in the following concluding passage: "So far as the United States is concerned, the first and immediate necessity is legislation that will permit the continuance of the present gold mining industry. This can be accomplished temporarily by establishing an adequate bonus support to offset the increased cost of labour and materials. A second step would be the formation of an international commission to act jointly with the Committee now formed in London, and with proper representatives of the Governments, for the purpose of re-establishing a fixed price for gold commensurate with present conditions, and, finally, the enactment of such legislation as will protect all paper issues that have been made on the present gold basis, and the taking of such steps as are necessary to see that the international gold asset controlled by the Allies is properly used, in order to place the Central Powers on a parity with us so far as the cost of producing material is concerned. In this way they would be prevented from drawing out the gold supply of the Allies through neutrals by selling materials in the world market at a lower gold cost."

The Gold Question.

A good showing is made by the accounts to 31st May last of the Gold Fields Rhodesian Development Company, the net profit amounting to £181,500, as compared with £101,100 in the fourteen months covered by the preceding statement. Whether increased dividends or larger profits on realisations is the chief factor is not stated. It is shown, however, that the receipts in respect of the company's holding of Falcon shares have more than offset the decline in dividends from the Shamva. These two concerns, of course, represent the company's most remunerative mining interests. The final dividend of 5 per cent. for the past year makes a total of 10 per cent., as against 5 per cent. in respect of the preceding period. In neither case, however, have the distributions fully reflected the earnings, part of the 1916-17 surplus being absorbed in connection with the capital reduction scheme, while £89,600 now goes forward, or about two-and-a-half times the amount brought

in. The investments, at book cost £913,200, are stated to show a large unrealised profit at current market prices. Mr. C. E. Parsons, the consulting engineer, contributes a fairly detailed report upon the affairs of the mines in which interests are held, while the general manager, Mr. J. G. Macdonald, covers a somewhat wider field. The last-named gentleman describes the Gaika as a "flashy mine"!

Captain Farrar writes: "The note by the East Rand board calls for a short reply. It was outside the province of my alternate director to agree to the abandonment of the southern claims. Much more than a mere mining question was involved. The board is good enough to invite me to visit the mine. I have, of course, been for years in closest touch with the company's affairs. The usefulness of a visit has, however, been too much prejudiced by the abandonment. The board now intimates that the position will be again reviewed at the end of the year. We must wait for this. Doubtless the board will be careful not to commit us shareholders without the fullest notice and a clear mandate."

The shareholders of the Durban Roodepoort Gold Mining Company in London recently unanimously passed the resolution for voluntary winding up. Mr. Percy A. Molteno, M.P., who presided, said that the company, starting with a capital of £90,000—afterwards increased to £125,000 on the acquisition of a further property—had, during the thirty years of its existence, extracted £5,269,000 of gold, and had paid in dividends £1,491,333, or 1,210 per cent. Good fortune was still attending it in its last days, a very successful sale of a portion of its assets in South Africa having been made. In addition, it still had assets of a liquid character, and he was able to hold out the hope that there would be a substantial sum for distribution among the shareholders.

Mr. C. V. Thomas, addressing a meeting of the Nigerian Tin Corporation in mail week, dealt with a subject which is exercising the minds of all who are concerned in the production of tin. The price the producer is to get now is apparently to be determined by an Inter-Allied Executive Committee, composed, it is understood, of two representatives of America, two of England, one of Italy, one of France, and probably one other member. This committee is to control the purchase and distribution of tin for the Allies, and Mr. Thomas has a shrewd suspicion that it is from his committee that permits will have to be obtained before any purchase of tin can be made, and that possibly the same body will have the power of fixing the price at which the metal should be sold. "America, so far as I know," Mr. Thomas said, "does not produce a single ton of tin, and therefore a fall of £50 in the price of the metal must be considerably to the advantage of our Ally, who, I believe, is the largest buyer of tin in the whole world; but I am perfectly certain that our Ally would never desire to save what to her are paltry tens of thousands of pounds, at the expense of those who are producing the tin." In Mr. Thomas's opinion, however, this committee have, under the powers they hold, created a monopoly in the tin market. "They have," he said, "placed large profits in the hands of a small number of privileged dealers, and, speaking generally, they have deprived the tin producer of the benefits of his efforts, while unnecessarily benefiting intermediaries at the expense of the producer. Therefore, this control is applied to the prejudice of tin producers, whether in Cornwall, Nigeria, or especially the F.M.S.; and I say it is an inequitable and unfair manner of dealing with the industry." Tin producers are not, however, taking it "lying down"; the Nigerian, Cornish and F.M.S. Chambers of Mines are moving in the matter, and it is hoped that the effect will be that they will receive in future a price for their product more commensurate with the profits they ought to be making and with the law of supply and demand.

Durban Roodepoort: Successful Sale of Assets.

Control of Tin.

Gold Fields Rhodesian.

The London papers, dealing with the *personnel* of the Committee appointed by the Treasury "to consider and report upon the effect of the war upon the gold production of the British Empire," point out that the selection as Chairman of Lord Inchcape (Chairman and Managing Director of the P. & O. Steam Navigation Company, a member of the Council of Foreign Bondholders, and a Director of the National Provincial and Union Bank and of many other important concerns) will command general approbation. The other members of the Committee are, as was announced in a recent issue, Sir Thomas Elliott (Deputy-Master and Comptroller of the Mint since 1913); Sir Charles Addis (Joint Manager in London of the Hongkong and Shanghai Banking Corporation, whose forty years' connection with which, at Peking as well as in London, qualifies him as an expert on Eastern currency and financial questions); and Mr. W. H. N. Goschen (of Messrs. Fruehling and Goschen and a Director of the British Trade Corporation, the Chartered Bank of India, Australia and China, and the National Provincial and Union Bank). It will have been observed that the new Committee is to report more particularly on "the treatment of low-grade ores and how far it may be of importance to national interests to secure the continuance of the treatment of such ores and generally how to stimulate the production of gold."

* * * *

The first annual smoking concert of the Underground Officials' Association was held at the Grand National Hotel last Saturday evening. The occasion was regarded as marking the progress of industrial organisation on the fields, and incidentally provided a personal triumph for Sir Evelyn Wallers, President of the Chamber of Mines, to whom many tributes were paid. There was a large gathering, Mr. F. C. W. Ingle, Vice-President of the Association, taking the chair. Sir Evelyn Wallers and Sir Robert Kotzé, Government Mining Engineer, were the principal guests, and the company included many representatives of kindred institutions. A splendid programme of entertainment was submitted. The principal toast was that of "The Mining Industry," submitted by the Chairman and acknowledged by Sir Robert Kotzé and Sir Evelyn Wallers. The Government Mining Engineer spoke in his usual happy vein about the future mineral development of South Africa, and the President of the Chamber gave one of his straight talks on the relations between employers and employed on the Rand. He warmly acknowledged the personal tributes that had been paid to him. Speaking in humorous vein, he drew attention to the motto put before the world recently by a very celebrated professor that "they must work who never worked before, and they who worked before must work the more." He said that with the first part of that they would all agree; but he was not sure that they would all agree with the second portion of it. *Inter alia*, he added: "The strengthening of unions, which to me is the right thing—as you have strengthened yours—is always accompanied by an added sense of power, and sometimes the added sense of power comes before the added sense of responsibility has taken a hold. It always presents a good deal of difficulty not only to those employed, but also to the employers, and those in the position of management. There is one thing I would like to sound a note of warning about, and that is that we must all lay ourselves out, with all the conviction, patience and sense of justice we possess to be moderate and sane in our actions. There is nothing that we require—all of us—more than that. We want to get a sense of proportion, so that any who are extremists, whether they be among the employed or employers, shall be submerged by the opinion, the considered opinion and the joint opinion, of the body of those with whom they were associated." The President of the Chamber went on to remind his hearers that the question of the returned soldiers would soon have to be dealt with. Mr. Forrester Walker, of the Miners' Union, also spoke, and the whole proceedings must be regarded as a triumph for the Underground Workers' Association.

TOPICS OF THE WEEK.

PEACE AND THE STOCK EXCHANGE.

IN no department of business has the coming of Peace been more heartily welcomed than on the Stock Exchange. For nearly four years the Johannesburg Exchange has "carried on" despite the restrictions imposed upon business with London, and exhibited remarkable stability, not to say enterprise, during that period. Not the least of its public services has been the help afforded to the Union Government in placing its various loans, necessary to the prosecution of the war, and it has also played a large part in facilitating the financing of the Far East Rand and of various local industrial enterprises. Early in the week, a congratulatory cable was received from the London Stock Exchange, to which a reply was returned in similar terms. One thing now only remains to crown the great news of the last fortnight, viz., the removal of the restrictions on share dealings between Johannesburg and the financial centre of the world. To that end the Johannesburg Stock Exchange cabled on Tuesday asking the London Exchange to use its good offices with the Imperial Treasury to have the embargo on business removed. To the people on the other side who are in touch with affairs in the Dominions, the reasons why that step is desirable in the interests of all concerned will doubtless suggest themselves readily enough. But the local Stock Exchange people nevertheless considered it desirable to place on record the reasons, as they view them, for the desired measure of relief, and they have therefore addressed a letter to the London Exchange setting forth in detail those reasons. Naturally we have not seen that letter, but through the courtesy of the chairman of the Committee of the Stock Exchange, Mr. D. C. Greig, we gather that they are somewhat as follows: (1) The expressed opinion of the local banks that the financial position of the Rand was at no period of its history sounder. (2) Insurance rates on scrip, etc., have now fallen back to the normal, almost nominal, rates prevailing before the war. (3) Dealings between Johannesburg and France have never been restricted and the local market has readily absorbed all the scrip our French allies have cared to dispose of. (4) Alien-owned scrip, both here and on the other side, remains safely in the hands of the Custodians of Enemy Property, and cannot, therefore, affect the question either way. (5) The Union of South Africa, like the other Dominions, has incurred heavy financial obligations due directly to the war, and should, therefore, be placed on an equal footing with the United Kingdom as a whole with respect to interchange of securities with London. Each of these reasons is, of course, capable of considerable elaboration, and several others might be adduced in their support. To us, a good and sufficient reason seems to lie in the fact that anything that would promote Stock Exchange dealings between here and London would facilitate the flow of capital necessary to develop the Far East Rand. In this way the Imperial Treasury, by removing the present restrictions, would be assisting the industry of gold production. The Secretary for Finance at Pretoria, we understand, has been supplied with a copy of the letter from the Committee of the Johannesburg Stock Exchange, and the Union Treasury can doubtless be relied upon to support the local Exchange in the matter. For our part, in view of the courageous and confident policy pursued hitherto by the Imperial Government in face of the unprecedented problems of Peace, we have no doubt whatever that the wishes of the Stock Exchange will be granted.

THE ECONOMIC POSSIBILITIES OF ANGOLA.

A Promising Field for Enterprise—Minerals and Ranching—Sympathetic Attitude of the Portuguese Authorities.

[By A. S. MacKINNON, M.E.]

THE Armistice, signed on the 11th November, inaugurated a state of rest, for which the world has been deeply yearning for a long time past, and it is confidently hoped a lasting peace will result therefrom. Already men's thoughts are turned to the development of the resources of the world in order to make good some of the ravages of the Armageddon which has convulsed it during the past four years and more. I have recently returned from an extended visit to Angola, Portuguese West Africa, and would like to convey to the readers of the *South African Mining Journal* a few of the many impressions I formed of what I can only describe as a wonderful country. I should, perhaps, preface my remarks in this connection by saying that I found the Portuguese Government very desirous in every way to foster the enterprise of the colonist. Indeed, the laws of the country are such that the colonist gets a very fair chance, especially if he shows energy and ability. The war has brought the two races—the Portuguese and the British—into close and intimate contact, and thus this attitude of fair play to the newcomer, especially if he be a Britisher, is likely to be accentuated, rather than weakened, in the future. That the country is highly mineralised goes without saying. The great belt, which extends from Namaqualand through Bothaland to the Katanga, passes through a large portion of Angola, and on this copper formation I would like to dwell for a moment. I was fortunate enough to acquire for African Minerals Concessions eight titles, amounting in extent to 4,000 hectares, approximately equivalent to 10,000 English acres. The ground covered by these titles is exceptionally rich in copper, of which there is sufficient in sight to enable the company to carry on, at a handsome profit, mining operations for years to come. I brought back with me to the Union a large quantity of samples, taken at a depth of about 20 feet, from a lode that is not less than 5 feet in width and is miles in length. All the samples were taken from the property covered by the titles above mentioned. Analyses: Mr. James Grey—48·8 per cent. of metallic copper; Messrs. Littlejohn & Whitby—35·25 per cent. of metallic copper; National Bank (Mr. Green)—43·5 per cent. of metallic copper; Dr. Marloth, Capetown—23·21, 27·18, 42·01 and 58·32 per cent. of metallic copper. It will not be necessary in the first instance to concentrate the copper, as it can be sent in its rough state to the coast for exportation to England, America, Japan, or any other Allied country, leaving a handsome margin for the company. I think 40 per cent. stuff could be sent to the coast at a cost of less than £8 per ton, and the freight home should be a gradually decreasing quantity, coming down eventually to 30s. and £2 per ton. Even allowing for a considerable drop in the present price of copper, there should be an excellent profit in mining the copper. My figures are necessarily a rough estimate, but I think they will be found to be on a conservative basis. Transport is easy to Huambo, a point on the Benguela railway, about 80 to 90 miles from the property I have pegged. In this connection I should say that the contour of the country is very favourable to the construction of a railway to Huambo, and this at the proper time could be carried out at a comparatively small cost. In view of the extremely simple manner in which the rock can be got out, the cost of mining should be very low indeed. It is unnecessary for me to mention that the harbour of Lobito is one of the finest in the world, and that all the products of Northern and Southern Angola will be shipped from there. Whilst on the subject of minerals, I should perhaps say that during my visit to the country, I became acquainted with a proposal, which, with the exercise of careful diplomacy in Lisbon, might very well result in the acquisition of mineral rights over a piece of country

213,530,545 acres in extent—the limits of which would reach from Lobito Bay down to Bothaland (embracing one of the finest harbours in the world, Port Alexandria), and from the Atlantic Ocean to Rhodesia. There are no insuperable difficulties in the way to prevent Union enterprise carrying into effect the scheme I have outlined. Already a large American Corporation is in the field and have acquired oil rights over a large tract of adjoining territory, and the results should soon exert world influence. Running through the property I have acquired for African Minerals Concessions is the River Cueba, with an average depth of about 8 feet, with a flow of 5 miles an hour and an average width of 60 yards. At many points there are rapids, and these could be utilised in such a way as to give all the electro-hydropower that might be required in working the claims. Labour is cheap and plentiful, averaging 200 reis per boy per day. The whole country has an abundance of timber, much of it of the kind required in the Rand. The supply, it is safe to say, would last the Rand as long as there is a Rand to mine. It is utilised by local firms in the manufacture of wagons and furniture. Rubber and rubber roots are products, the marketing of which forms an important industry. The high plateaux, averaging 5,000 feet above sea-level, are very healthy, and are used by the white inhabitants as health resorts. In particular, Huambo is destined to be a big health resort and has been chosen for this reason as the future centre of the railway workshops. It is also a large and thriving centre of the fruit-growing industry. On these plains sheep raising is carried on on a large scale, and, indeed, the whole country lends itself peculiarly to cattle ranching, which with the world's depleted food supplies as the result of the war, must soon become an industry of first importance. I met a prosperous Dutch farmer, Mr. Erasmus, formerly Bank Manager at Potchefstroom, and, later, Johannesburg, who has long installed himself as a thoroughly up-to-date farmer, and is making sheep farming a highly payable proposition. I also met a Mr. Meyers, who is farming on a large scale, and is a big importer of pedigree cattle from Holland and England, which cattle he crosses with Afrikaner cattle, resulting in useful, sturdy stock. The country in the south towards the border of Bothaland is especially adapted for cattle raising. One of the principal farms in Benguela carries on a large trade in the export of cattle for slaughter purposes. In this connection it may be taken for granted that the country is well watered, and there is an abundance of good grass practically all the year round. I should mention that on the high plateaux there is an annual visitation of frost in May, June and July, just as is our experience here on the Rand. There is no difficulty in obtaining the most satisfactory title to land after it has been surveyed. The Portuguese are very progressive in the matter of roads, and the country has a splendid system of wide, well macadamised thoroughfares from end to end. I hope in this brief outline of the general characteristics and physical features of Portuguese West, I have been able to convey some idea of the great possibilities of a country which is bound to command more attention in the future than has been the case in the past. As soon as the future of Bothaland has been decided by the Peace Conference, railway communication between the Union and Bothaland will doubtless be increased, and the linking up of Portuguese West through Bothaland and the Tanganyika brought within practical politics. Thus Portuguese West would then be accessible by land, and be "brought to our doors" so to speak. In my humble opinion, there is a great future for all the African territories facing the Atlantic, and Portuguese West stands well in the running for its fair measure of success.

THE ALLIES' TIN POOL AND PRICES.

A Review of the Position and Prospects Before the Armistice.

THE announcement that two-thirds of the world's production of tin would be received by the United States under a pooling arrangement made at a recent conference in London between representatives of the United States, Great Britain, France and Italy was made on 11th September by Mr. Bernard M. Baruch, chairman of the War Industries Board. According to the *New York Commercial Chronicle*, all shipments of pig tin, tin ores and concentrates will be consigned to the American Iron and Steel Institute, which will pay for and distribute the metal through the United States Steel Products Company. The following is an extract from Mr. Baruch's announcement: Each country participating in the conference will get its needed supply of pig tin. The action amounts to an international monopoly of a beneficent nature. The plan of distribution worked out allows the United States about 80,000 tons of pig tin, or two-thirds of the world's entire production annually. With the War Industries Board supervising the allowance to this country, all imports of pig tin, tin ores and concentrates will be consigned to the American Iron and Steel Institute, which will receive, pay for and distribute the metal to the industry through the United States Steel Products Company. The price will be regulated by the War Industries Board and will be maintained at a level which will encourage production in the tin mining countries—Great Britain and the Straits Settlements chiefly—and stop profiteering. Prices, rules and regulations will be announced later. It is probably that users and dealers may be licensed. The War Industries Board believes there will be ensured by these arrangements a steady supply of material at a stable and reasonable price. Since the negotiations for the pooling arrangement began in London six weeks ago the price of pig tin has fallen steadily. That there may be a sufficient supply of tin in the United States to meet the war needs and to supply essential civilian users and dealers may be licensed. The War Industries made effective through co-operative efforts by the War Industries Board and by the Food and Fuel Administrations in the enforced substitution of other material than tin for containers, wherever that is possible. Tin container manufacturers have agreed with the War Industries Board in plans that will curtail their use of tin-plate 30 per cent., which means a saving in the next three months of about 150,000 tons of tin-plate.

A BRITISH VIEW.

Before the war the chief use of tin was the production of alloys, its consumption in the manufacture of tin-plate being much less than was commonly supposed. The present position is somewhat different, owing to Germany being out of the market and the demand from America having become bigger than ever. The official figures for the consumption of tin in the United States during 1917 show that the proportion used in tin-plate manufacture is greater than it used to be. Indeed, the tables apparently credit tin-plate manufacture with the premier position, for, with a total consumption of 76,000 tons, the list is headed with 27,600 tons as the amount used in the manufacture of tin-plate. The other items are given in detail, but on addition of the various figures the total used in the manufacture of alloys comes to about 35,000 tons. The remaining 13,400 tons is distributed among a number of uses in such a way that the actual means of employment is not easy to ascertain. The classification "tin andterne plate" requires fuller explanation, for in this country most of the lead-tin coating is in the domestic tin utensils, which are not included in the returns of tin-plate manufacture. Thus the figures of United States consumption do not clearly determine the actual uses of the metal. While making this comment, it is well to add that no English or German statistics ever told as much. The tin position at the present time is partly explained by the foregoing remarks relating to consumption, but the price of

tin in the market and the scale of output are the chief points that interest producers. "The market quotation for tin has been (argues the *October Mining Magazine*) at an absurdly high level recently, and it is well that the British and United States Governments are endeavouring to bring the quotation down. The sound men connected with British mining operations have deplored the high price ruling at present, holding that £250 per ton is the highest legitimate quotation. Other controllers of producing companies appear to wish, however, as monopolists, to squeeze every penny out of the buyer who wants the commodity badly. The position of the producer is that he is able to make a statutory profit with a small output when the price is high. On the other hand, the Allies call for metal and still more metal. If the companies produce more metal their excess profits are commandeered. As a counter-stroke, the Governments can control the price, placing the companies in the position of having to increase their output in order to maintain their profits, thus pleasing the buyer both as to price and quantity of metal. No doubt the producers are protesting to the Government against this lowering of the prices, but our own view is that the Government's firm attitude will be for the eventual benefit of all. The plea that many mines cannot make a profit if the price is lowered any further is no doubt true in a few cases. The same holds good with many of the high-cost low-grade copper mines in the United States, but the American Government refuses to advance the quotation for the benefit of these mines, basing its action on the principle of the public necessity and welfare."



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THE MINING DISTRICT OF HEIDELBERG.

Attractive Prospects Marred by Exploiters' Methods—London and Local Criticisms.

[By JOHN MOFFAT.]

THE following article appeared in the issue of *Truth* of the 4th September last, and it is as well in the interests of the district that some explanation regarding the matter should be given to the public.

I am pleased to see that the Directors of the Oceana Development Company have bowed to the storm of condemnation aroused in market and other quarters by their offer at 2s. 6d. each of an option upon an option, and have now officially withdrawn it. But it does not alter the fact that the offer should never have been made. However, it is an interesting side-light on the "get-rich-quick" methods—and a fig for patriotism or propriety!—which prevent most serious observers from paying much attention to the tall talk as to the potentialities of the South-Eastern Rand (or the Heidelberg District) which has for the past eighteen months been made the pretext for pushing such shares as Oceana Developments, New Albions, Houtpoorts, Marievale Nigels, Vaal Rhyer Gold Estates, etc. Either those behind these companies are not really very sanguine themselves as to the prospects of the properties which they puff so blatantly, or else they are determined that the public shall find the money to prove them.

As far back as the beginning of last year the Houtpoort Company, for instance, was publishing isolated rich assays from areas it has under option, and periodically since, whenever market conditions are favourable to share-pushing, it has done the same thing. Yet, so far as I have any information, the company has never followed the reef for any distance, or, if it has done so, it has not published the average results. Isolated good assays mean nothing at all. You can get them in places where there never has been a payable gold mine, and probably never will be. However the latest cable says that the company "can now proceed with the development of the (Tulipvale) mine," although where it is going to get the money to do so in earnest I do not know, since, according to its last balance-sheet the company had no resources of its own worth talking about.

Companies more remote from the reef, like the Oceana Development, are in a happier position from the share-pushers' point of view, since they can play about for a long time yet with boring operations before they tire out the public sufficiently to have to turn to and make some show of starting deep-level sinking. It is quite possible, as I have said before, that here and there fresh payable mines will be opened up in the Heidelberg District, but, judging by the experience of the Nigel and Sub-Nigel Companies, it is going to take a lot of money and time to sift the good ground from the bad. In the meantime for the market to value a company like the Houtpoort, with a miscellaneous lot of options and no money, at £400,000—which is what the current price of over 4s. for the 2s. shares means—is nothing less than the height of absurdity.

It is not difficult to understand the language of the mining editor of *Truth*, and to a great extent he is perfectly justified in arriving at his conclusions. At the same time there is not the slightest doubt that from a mineral point of view Heidelberg district, if judiciously and honestly prospected and developed, will compare very favourably in course of time with the Rand as a gold mining centre. At one time Heidelberg district was turned down on every occasion, the mining houses no doubt fearing the deflection of capital and labour from the Rand, but now every farm down to Heidelberg on the accepted Main Reef series line has been acquired by the mining groups, the latest to be taken up being Spaarwater, a deep level proposition which practically adjoins the town lands of Heidelberg, and was secured by the Lace Proprietary Co., Messrs. Barnato Brothers being also interested in this proposition. The manner in which the propaganda work has been carried out, by which people overseas have been induced to invest in certain propositions in the district is very interesting, and it is unfortunate for those concerned that there is very little chance of their ever getting any return on their capital under the present regime. Geologists of repute, such as Dr. Mellor, Dr. Corstorphine, Dr. Hatch, and others, as well as all the mining houses, have long known of the extension of the Main Reef series in the Heidelberg district, but the article referred to would imply that such a discovery was only recently made. Most of the geologists have identified the Nigel Reef as the Main Reef. Leader and have further agreed that the Van Ryn Reef, Modder Reef and Nigel Reef are one and the same thing. However, about the time the amateur geologists invaded the district the Nigel was not a name to charm money out of the public

with, and it was necessary for the new-comers in their own interest to overturn the geology of the district so as to enable them to raise capital overseas. It was further deemed advisable to use names of well-known existing mines, notwithstanding the fact that the properties so floated were situated thirty and forty miles away from the original properties, whose names with slight variations were adopted. It reminds one of the prospectus of a company which was issued in the early days of the Rand, describing the position of the property under flotation as adjoining the Robinson and Durban Roodepoort mines, and yet the actual situation of the ground was on the farm Sterkfontein outside Krugersdorp. On the same principle, one must not be surprised if someone comes along some day with a property, say, in Zululand, and wants to call it the Robinson South West or the Ferreira Deep Deep Co., Ltd. The so-called geologists referred to have devoted their attention in the Heidelberg district to the line of Witwatersrand formation which runs from the Nigel towards the Vaal River, but every property acquired by them has been on the deep levels of the Main Reef series. They have also bestowed their attentions on the Balfour district, and if an independent mining engineer was instructed to examine carefully and report on any properties acquired by this group he would in all probability fail to find a payable proposition amongst the whole lot, notwithstanding the many thousands of pounds which have been extracted from the pockets of people in England, and wasted. In the same paper referred to before it was stated that "sinking and opening up on the reef on the town lands of Heidelberg is now reported to be well in hand." It might interest the shareholders of the company who hold the town lands of Heidelberg, which company has the high sounding name of the "Eastern Van Ryn and Modderfontein Gold Reefs, Ltd.," that no reef had been struck at that date (11th May, 1918) on the property, and the only outcrops they have are those belonging to the Kimberley series, which has never been found payable in the district. Dealing with Houtpoort, Ltd., the issue of *Truth* of 4th September last mentions that "the latest cable says that the company can now proceed with the development of the Tulipvale Mine." This farm is held only under a short option by that company, is situated on the horizon of the Kimberley series, and no payable mine has been proved on it. The other farms lying in the horizon of the Kimberley series of the Witwatersrand formation are Boschoek, Boschfontein, Klipstapel, Mount Arabel, Schikfontein and Sterkfontein, and although a considerable amount of prospecting has been done on those farms nothing payable has been exposed from a mining point of view. In the *African World* of 22nd June, 1918, it is noted that "an outcrop has been found on Een-



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dracht which is believed to belong to the Main Reef series," and in another issue of that paper they report that "it is stated that the reef is 3 feet wide ranging in values from 3 to 12 dwts." According to all the leading geologists this farm carries the outcrops of the Elsburg series, so how anyone can expect to find the Main Reef series amongst the uppermost beds of the Elsburg series passes understanding. Now the question arises if, in the interests of the country, the publication of such misleading information cannot be put a stop to by the Government Mining Engineer or some other qualified official of the Government. Such misstatements do incalculable damage to the district and to the whole country. The present Government Geologist, Dr. Rogers, has been engaged since the beginning of this year making a geological survey of the Heidelberg district, and it is hoped that his reports and maps of that part of the country will be published as soon as possible in the interests

of the investing public. Heidelberg district has been under a cloud for many years, but one must not forget that the Nigel Mine during its lifetime produced four million pounds' worth of gold and paid one million pounds in dividends. Since the Sub Nigel Mine has been properly developed, it has attained the position of being the second richest mine now on the Main Reef series, the only mine showing better results being the Meyer and Charlton. The Nigel and the Sub Nigel are the only two mines which have been judiciously and honestly opened up in the district, and it would be absurd to imagine that there are not other mines equally as good and perhaps better. The day has gone by when people can sit in their office, make maps, and put whichever reefs suit their purpose on paper, and it is the duty of the Mines Department to see that the people who invest money in the mining industry, which at present is the mainstay of the country, should not be misled.

MR. W. E. BLELOCH'S REPLY.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—I have seen a letter signed "John Moffat" in the *African World* of the 12th October referring to the Eendracht borehole and other mining operations in Heidelberg district, and I am told that he has despatched something similar to yourself. The Eendracht boring operations are controlled by Dr. Hans Sauer, who is paying for the work and is regularly informed of the progress made and receives diagrams of the core and specimens of the strata regularly. Mr. Moffat has had no authority to visit the property. He may, it is true, have visited it clandestinely and have thus obtained access to the core trenches and been misled through seeing core in the trenches after all reef matter had been removed. In any case, his statement about the borehole and the prospecting on the farm is quite untrue. Having left the service also of the Eastern Van Ryn and Modderfontein Gold Reefs, Ltd., it was perhaps natural that he should differ regarding the company's property, which, however, he does on the strength of such names as Dr. Mellor, Dr. Corstorphine and Dr. Rogers. I should think that in view of the miserable results from the "Main Reef Leader" of the two first-named geologists, which traverses the Platkoppies line on which Mr. Moffat has been trying to do a deal for some time, those gentlemen will not thank him for again drawing public attention to their conclusions. Nor do I think that Dr. Rogers is likely to accept Mr. Moffat as his instructor. Still less do I believe that he has confided to him alone the conclusions of the Report which he is to make to the Government within some months. Among others in whose confidence Mr. Moffat would appear to be is the technical staff of the Consolidated Goldfields. If he should be right in regard to their views of the work and reefs on the Southern Van Ryn it would be interesting to know why Mr. John Moffat should have been selected to convey the information to the public. Mr. Moffat has prospected the Heidelberg district on the old Molyneux line of grit or grit contact—for one cannot now call it a "reef" or identify it as the "doctors" did in the past as "Main Reef Leader"—and I should say that all the reef he has managed to take out could be easily loaded on a couple of wheelbarrows. Fortunately the fate of Heidelberg district about which Mr. Moffat professes such anxiety does not depend on grit contacts, for its value is based on something immensely more solid, viz., the Van Ryn Reef which is the basis of the great mines of the Far East Rand, to which, by the way, the consulting engineer of the Consolidated Goldfields significantly draws

attention in the last annual report. In the Heidelberg district this Van Ryn Reef has been already exposed, at Tulipvale for instance, with good and improving values and 4 feet thick to a depth of 100 feet. Its position has been located through the town lands of Heidelberg, Boschfontein and other farms to the south; and it will, I make no doubt, in due time be revealed at easily workable depth in the borehole now going down on Eendracht and at much less depth in the holes now being sunk on the town lands and on the farm Boschhoek. As for the allusion to Mr. J. S. Curtis, the City Editor of the *African World*, in the course of a crushing reply to his correspondent wrote: "The person who ought to know is the man who is financing the venture. That is Dr. Sauer. Dr. Sauer informed me on Tuesday that the late Mr. Curtis offered, and his services were accepted, to verify and check the geological results of the borehole and to make such correction with regard to deviation as might be required." I may add that I also have Mr. Curtis' views on this area, in which he was an ardent believer. The City Editor of the *African World* deals also with other points in the letter. But enough has been said.—Yours, etc.,

W. BLELOCH.

Electrolysis of Cyanide Solutions.

Further investigations in the recovery of gold from cyanide solutions by electrolysis is indicated in a patent granted to U. C. Tainton and M. F. L. A. Aymard, of Johannesburg, Transvaal, South Africa. The invention comprehends passing solution under pressure through porous electrodes arranged in an apparatus similar to a filter press, anodes and cathodes alternating with distance frames. The object is to bring the solution into intimate contact with the material of the electrodes, thereby overcoming a defect in former processes. The inventors claim to be able to precipitate 99 per cent. of the gold contained in a solution of 3 dwts. per ton in a single passage of the solution through the electrode in a period of less than 5 seconds. Electrodes are in the form of filter frames, the anode being composed of sheets of peroxidized lead covered with filter cloth, and the cathode of filter cloth supported on each side by wire gauze or perforated metal plate. In operation this cathode is to be covered with comminuted conducting material, such as finely divided graphite, which is deposited out of a liquid carrying the same in suspension. When the apparatus is thus prepared for use, a gold-bearing solution is passed through it, and gold is deposited on the graphite of the cathode.—Tainton and Aymard, *Met. and Chem. Eng.*

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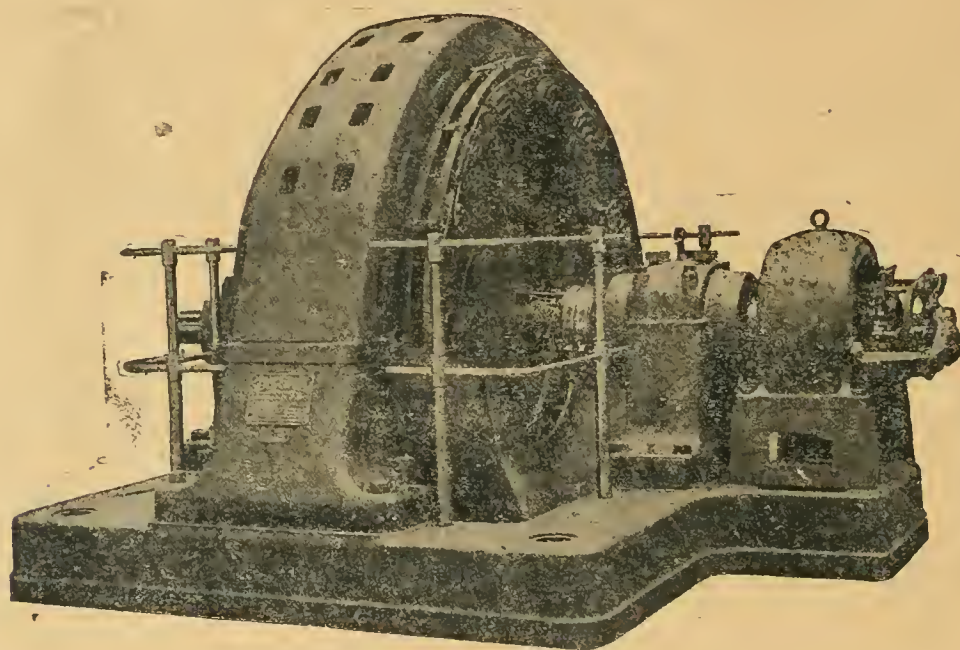
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THE BANTJES SITUATION · EXPLAINED.

Full Statement by the Directors.—Deal with the Consolidated Main Reef.

The latest report of the directors of the Bantjes states:—The directors regret to announce that, on the advice of the consulting engineer, Mr. H. Stuart Martin, they have decided to discontinue mining and milling operations at an early date. The prevailing high working costs due to the war, made up of increased costs under the headings of labour (white and coloured) and stores, make the continuation of operations impossible for the time being without incurring heavy losses. Shareholders will recollect that for some years the company has struggled on, firstly, in the hope that the values in the South Reef which were found to be diminishing as depth was attained would be offset by an improvement in the Main Reef Leader, and, secondly, with the object of prospecting the mine at still greater depth in the hope that better values would be encountered. In August, 1915, owing to the very low percentage of payability met with on the South Reef (only 14 per cent. for the twelve months ended June, 1915), it was decided to concentrate work on the Leader (which underlies the South Reef at a distance of about 110 feet), as it was at that time showing improved values, especially on the then lowest level (15th) west of the incline shaft. For the two years ending June, 1917, 23,000 feet of development was done in the Leader; its payability for 17 months prior to this date was 51 per cent. These results were sufficiently encouraging to warrant the more vigorous development of the Leader, and arrangements were accordingly made for financing the company up to £75,000 for this purpose. Coincident with this arrangement the Leader drives nearly all became unpayable, and, after a period of three months' poor results, on the advice of the consulting engineer, the board decided that it was not justified in incurring any indebtedness in an extensive further development of the Leader above the horizon of the 16th level. Notwithstanding these discouraging results it was decided to test the Leader for a few months longer on a restricted scale, and shareholders were warned in the June, 1917, quarterly report (issued 7th August) that unless unexpected improvement occurred during that time development operations would be stopped and milling operations continued as long as profits could be earned, after which the mine would be closed down. In the meantime, the sinking of the incline shaft was continued, reaching the 17th level in December, 1917. Good values were at first encountered in the Leader on the western drive at this horizon, but these have since fallen off, and for the whole of this drive (a distance of 225 feet being sampled) the average is barely payable. At the annual meeting held in June last, shareholders were informed that the immediate policy of the board was to prospect the reef on the 17th level from the incline shaft, to endeavour to reach the 18th level and to prospect the reefs on that horizon. The 18th level was reached in September, 1918, the shaft cutting through the Leader between the 17th and 18th levels. Whilst good values were obtained in the Leader at this point of intersection, the values on the 18th level are disappointing. These results demonstrate the patchy character of this reef, which has been its disappointing feature since it was first extensively developed. The incline shaft is now some 50 feet below the 18th level. Reporting on the values obtained below the 16th level, the consulting engineer now states: "In the few places where the South Reef and Main Reef have been exposed no values have been found; although good values over short stretches have been exposed in the Main Reef Leader, on the whole the disclosures are very discouraging, and there is little hope of blocking out any quantity of payable ore for stoping in the immediate vicinity of the shaft. On the immediate east side of the incline the reef is cut off by dykes and faults, and any further exploration on this side will take considerable time and money. On the west side all the evidence is against proving payable values except for a short distance just west of the shaft. To continue this shaft in depth and test new areas by extensive

development is the only method of getting into a new payable patch: whether such is likely to be met with is, of course, impossible for anyone to forecast." The consulting engineer further states that during the nine months of the current year about 136,000 tons have been mined from the reserves on hand at the commencement of the year; that the limit of payability to meet present-day costs has had to be raised to $5\frac{1}{2}$ dwts., which has had the effect of eliminating a large tonnage for the time being from the payable reserve; that there is now immediately available and accessible to the incline shaft (which is the only shaft being worked) a tonnage of about 95,000 tons of a value of 6·3 dwts.; that the remaining tonnage, which includes blocks scattered throughout the mine, would probably average in the neighbourhood of $5\frac{1}{2}$ dwts.; to attempt to work from this diminished reserve will so restrict the output that heavy losses will be made; and, further, that if the mine continues working after the end of the current year, an additional sum of about £15,000 to £20,000 will be required for renewals to the plant and equipment on the surface and underground, an expenditure which he cannot recommend. The board has therefore decided to give notice to the company's employees that it intends to cease operations on the 30th November next. As it will take some little time to clean up the mine and make the necessary preparations for closing down, the actual date of stopping milling operations is somewhat uncertain, but this will occur between now and the end of the current year. Comparing the working costs of to-day, which do not include the expenditure necessary to provide a normal footage of development, with those obtaining prior to the outbreak of war, it is found that the additional costs incurred amount to 2s. 8d. per ton. This increased cost, on the basis of 20,000 tons milled per month, is equal to £2,666 per month; and had it not been for the war conditions it is evident that the company would have been able to continue operations to a greater depth in order to further test the large claim area still unexploited. As the future of the mine is so dependent upon values obtaining at a lower depth than the present workings, the directors have entered into an arrangement with the Consolidated Main Reef Company, on the Bantjes eastern boundary, under which the drive already driven into the Bantjes claim area for a distance of 422 feet from the Consolidated Main Reef Company's western boundary, shall be extended westwards to a point where the Bantjes incline shaft would intersect it, i.e., about three levels or some 500 feet below the 18th level. This drive will be on the Leader, and will thoroughly test a large stretch of reef measuring about 3,500 feet from the Consolidated Main Reef Company's present boundary and will enable the South Reef to be prospected on the same

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horizon. The terms agreed upon between the two companies are that the Bantjes shall permit the Consolidated Main Reef Company to mine the ore contained in a strip of claim area situate on the Bantjes' eastern boundary, approximately 26 claims, for which right the Consolidated Main Reef Company is to pay the Bantjes Company a royalty at the rate of 1s. 6d. per ton of ore sent to the crusher station, the Consolidated Main Reef Company agreeing to put in the drive referred to at cost price to the Bantjes Company. The first 1,000 feet of this drive will pass through the claim area leased as above by the Consolidated Main Reef Company and will be paid for by that Company. Under the best conditions, a period of some three years is necessary to complete the drive to the Bantjes incline and the values obtained in it will have an important bearing on what future development work, if any, is to be undertaken. The ground leased is quite inaccessible to the Bantjes Company at present. For the past two years the directors and London agents have waived their fees; for 16 months prior thereto only half fees were received by the directors and reduced fees by the London agents. The whole of the Rand Mines' head office fees, comprising the services of the technical and other departments, have been entirely remitted during the past two years, the only charge paid being a very small sum for secretarial work. These arrangements were made voluntarily in the hope that the mine would be able to recover itself. The directors have made every effort to combat the adverse conditions which the mine has had to face during the last few years; apart, however, from the low percentage of payability met with in the development operations, the burden of increased costs due to the war has been the deciding factor which has necessitated the stoppage of operations. The financial position of the company per 30th September, as disclosed by the *pro forma* balance sheet attached, shows: Cash on hand, after providing for liabilities, £6,080; cash assets, stores, sundry debtors,

exclusive of Rand Mines Power Supply Company's compressor account, £31,193; total, £37,273. Whilst it is hoped that the revenue to be derived from the 26 claims leased to the Consolidated Main Reef Company will be sufficient to meet the cost of the exploratory drive, it is evident that the assets at the Company's disposal are such that the company will be able to provide for the cost should this hope not be realised.

Zaaipplaats Tin.

The results of the Zaaipplaats operations for the month of October, 1918, as follows:—Days run, 12; concentrates won, 25 long tons; estimated profit for the month, excluding Government taxes and directors' fees, £2,105 4s. 8d.; capital expenditure, £26 9s. 3d. The reduced output is entirely due to the curtailment of operations occasioned by the influenza epidemic.

The Union's mineral output for September was valued at £4,010,085, a decrease on the August return of £143,315. The diamond output was 225,232 carats, representing £630,693, a decrease of 4,022 carats, and in value £11,934. The coal production was 786,804 tons, of the value of £262,416, being a decrease on the August figures of 74,459 tons, and £19,764. The Transvaal Collieries sold 508,764 tons, which was a shortage of 66,305 tons, due to restricted operations consequent on the epidemic. The Cape output was 317 tons, a decrease of 87; the Free State, 67,781, a decrease of 7,565, and Natal, 219,942 tons, a decrease of 502 tons. The copper output was valued at £43,433, representing 911 tons, and tin, £29,596, representing 125 tons. The Labour return shows that 32,415 whites and 270,150 coloureds were employed in mining throughout the Union, the former being an increase of 119, and the latter an increase of 3,804, compared with the previous month.



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LATEST RESULTS FROM THE RAND MINES GROUP.

The following are the principal points from the reports of the directors of the companies embraced in the Central Mining/Rand Mines group of the result of operations for the third quarter of the year:—

New Modderfontein.—Tonnage crushed, 217,000 tons; total yield per ton, 10·879 dwts.; total profits for the three months, £273,304. The tonnage milled for the quarter increased 14,500 tons, the average per month being 72,300 tons, of which 17,500 tons per month were dealt with in the new plant. The yield, compared with the preceding quarter, was 11d. per ton milled higher, working costs 1d. per ton less, and the profit per ton 1s. greater, the net result being an increase in profit of £28,855. The greater portion of development work was again confined to cross-cutting and making ore passes to new stopes. The relatively small footage on reef gave satisfactory results. Additional air pressure is now available to deal with a greater number of rock drills, and development will be resumed on a more extensive scale. The main winding engine has now been completed, the change over has been successfully accomplished, and production can be looked forward to on an increased scale. The influenza epidemic may interfere with operations for a short period and to a limited extent.

Ferreira Deep.—Tonnage crushed, 118,000 tons; total yield per ton, 7·699 dwts.; total profit for the three months, £54,208, and for the previous nine months, £159,536. The tonnage milled was affected by the low native labour supply, temporary interference with hoisting at No. 1 shaft, and the influenza epidemic, which began in the latter half of September and is still seriously affecting results.

Crown Mines.—Tonnage crushed, 480,000 tons; total yield per ton, 6·648 dwts. The profit for the three months was £109,623, and for the previous six months £208,328. Unsatisfactory labour conditions, accentuated by the outbreak of influenza towards the end of the quarter, resulted in a reduction of 10,000 tons in the output, and of practically £8,000 in profit, compared with the preceding period. The current quarter's operations are also likely to be adversely affected for the same reasons. Development operations have expanded with a continuation of satisfactory reef disclosures. No. 15 shaft has been sunk 248 feet to a depth of 319 feet, the surface equipment has been completed and sinking is now in full swing. No. 14a shaft, the second stage of No. 14 shaft, was commenced, and sunk 155 feet, whilst 677 feet of miscellaneous work was done in that locality. The native labour force at the end of the quarter was 12,673, as compared with 12,855 at the end of June, 1918.

Village Deep.—The total yield for the quarter was 50,135 ozs., the tonnage crushed being 143,000. The profit for the quarter was £29,632, and for the previous six months £44,764. Unsatisfactory labour conditions, coupled with the outbreak of influenza towards the close of the quarter, had a serious effect on operations, the tonnage output decreasing 10,800 tons below the preceding quarter. The

increase in working costs was balanced by a higher yield, and the profit for the period totalled £27,458, or £1,511 less than for June quarter. Development operations were well maintained with fair reef disclosures. Negotiations with the Government for the right to mine under Springfield Extension and a portion of La Rochelle have been satisfactorily concluded.

Rose Deep.—Tonnage crushed, 158,300 tons; total yield per ton, 5·483 dwts. The profit for the three months was £37,206, and for the previous six months £84,321. The native labour position continues to be extremely unsatisfactory.

City Deep.—Tonnage crushed, 168,300 tons; total yield per ton, 8·885 dwts. The profit for the three months was £106,846, and for the previous six months £293,036. The profits were adversely affected by the shortage of labour and the influenza epidemic. These difficulties were accentuated by falls of ground in one of the richest parts of the mine, which temporarily interfered with the output of ore and were responsible for the decline in the average yield per ton.

Witwatersrand Deep.—Tonnage crushed, 94,470 tons; total yield per ton, 5·753 dwts.; profit for three months, £3,676; and the loss for six months previous, £9,516. The native labour supply continues to be most unsatisfactory, and the tonnage crushed has, therefore, shown a further decline. The working costs include £3,785 spent on re-timbering the east incline, and £2,468 for sinking the south incline shaft 111 feet and cutting the 23rd level station.

Nourse Mines.—Tonnage crushed, 125,950 tons; total yield per ton, 6·193 dwts.; total profit for the three months, £8,141. Compared with the preceding quarter the profit showed a reduction of £7,870, the tonnage milled decreasing 2,050 tons, the yield being 8d. per ton higher, and working costs 1s. 10d. greater. The proportion of payable development showed an increase, whilst values were well maintained. Towards the end of September, and during October, operations were much disorganised by the influenza epidemic.

Bantjes Consolidated.—Tonnage crushed, 59,150 tons; total yield per ton, 5·731 dwts.; total profit for the three months, £1,231; and loss for the previous six months, £788. The board has decided to give notice to the company's employees that it intends to cease operations on the 30th November next. As it will take some little time to clean up the mine and make the necessary preparations for closing down, the actual date of stopping milling operations is somewhat uncertain, but this will occur between now and the end of the current year. The details of the arrangement whereby the drive from the Consolidated Main Reef Company's western boundary will be extended to a point where the Bantjes incline shaft would intersect it has been published.

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LATEST FROM THE UNION CORPORATION MINES.

Points From Quarterly Reports.

Geduld Proprietary.—The payable reef disclosures during the quarter were 945 feet, having an assay value of 24.9 dwts. over 25 inches. Influenza broke out on September 25, and during its course interfered with work considerably. Conditions are rapidly becoming normal. Comparison of results:—Tons milled: June, 1918, quarter, 132,600; September, 1918, quarter, 134,600; 2,000 increase. Working profit: June quarter, £59,082; September quarter, £58,661; £421 decrease. Working costs per ton milled: June quarter, 19s. 6.7d.; September quarter, 20s. 2.7d.; 8d. increase. Yield per ton milled: June quarter, 28s. 5.6d.; September quarter, 28s. 11.3d.; 5.7d. increase.

Modderfontein Deep.—The payable reef disclosures were 880 feet, having an assay value of 17.8 dwts. over 46 inches. No expenditure on capital account was incurred during the quarter. The expenditure incurred during the quarter amounted to £7,493 19s. 8d., whereas the fixed charge to working costs of 1s. per ton milled gives £6,475. Comparison of results:—Tons milled: June, 1918, quarter, 128,100; September, 1918, quarter, 129,500; 1,400 increase. Working profit: June quarter, £149,860; September quarter, £145,080; £4,780 decrease. Working costs per ton milled: June quarter, 17s. 4.6d.; September quarter, 17s. 7.6d.; 3d. increase. Yield per ton milled: June quarter, 40s. 9.4d.; September quarter, 40s. 0.5d.; 8.9d. decrease. Influenza

broke out on September 28, and during its course interfered with work considerably. Conditions are rapidly becoming normal.

Princess Estate.—The footage sampled was as follows:—South Reef, 145 feet, averaging 9.3 dwts. over 26 inches; Main Reef, 405 feet, averaging 6.7 dwts. over 44 inches. It is estimated that the payable ore (based on the milling width) developed by the above footage is: South Reef, 7,285 tons; Main Reef, 7,871 tons; total, 15,156 tons. These figures are subject to re-calculation at the end of the year, when block values are made out. Comparison of results: Tons milled: June, 1918, quarter, 57,630; September, 1918, quarter, 55,600; 2,030 decrease. Working costs per ton milled: June quarter, 29s. 3.9d.; September quarter, 29s. 7d.; 3.1 increase. Yield per ton milled: June quarter, 26s. 11.9d.; September quarter, 26s. 3.5d.; 8.4d. decrease. The work at the vertical portion of the shaft was completed early in September and hoisting through it resumed, but before conditions became stabilised Spanish influenza broke out and caused great disorganisation, which is only now being overcome. The pumping plant has given considerable trouble, thus accounting for the small footage sunk in the incline shaft during the quarter. For the same reason the proportion of ore obtained from the comparatively high grade central section was lower than anticipated.

PROGRESS ON THE MINES SELECTION GROUP.

Springs Mines.—The quarterly report states that the linear development for the quarter amounted to 4,806 feet, of which 3,245 feet were on reef averaging 15.69 dwts. over a reef width of 22.45 inches. Of the footage on reef 1,855 feet, equivalent to 57.2 per cent., were in payable areas and averaged 18.60 dwts. over 30.04 inches. The total profit for the quarter was £121,081 17s. 2d. Sinking operations were resumed at No. 3 shaft, the total depth reached at the end of the quarter being 192 feet, of which 163 feet are timbered.

Brakpan Mines.—The quarterly report states that the linear development for the quarter amounted to 4,099 feet, of which 2,485 feet were on reef averaging 8.04 dwts. over a reef width of 38.65 inches. Of the footage on reef 1,050 feet, equivalent to 42.3 per cent., were in payable areas and averaged 16.78 dwts. over 35.92 inches. The profit for the quarter was £84,751. During the quarter work in connection with the cementation process was continued at No. 3 circular shaft. In the first week of the quarter a distance of 12 feet was sunk in No. 4 circular shaft, when a flow of water was encountered. The cementation process has since been successfully applied, and sinking operations were

resumed towards the end of the quarter, the footage amounting to 6 feet. The footage sunk for the period under review was therefore 18 feet, making the total depth at the 30th September 709 feet. Capital expenditure incurred during the quarter amounted to £32,934 9s. 7d.

Daggafontein Mines.—During the quarter No. 1 shaft was dewatered and the station recovered, while the dewatering of the main incline was also proceeded with. The cutting of the pump chamber and sump at the bottom of the shaft was resumed, and the installation of the pump column was taken in hand. A breakdown of one of the smaller winding engines, however, somewhat interfered with the progress of the work. During the early part of the quarter No. 2 shaft was sunk a further 37 feet, making the total depth 682 feet, of which 667 feet are timbered. A distance of 163 feet having been sunk in the cemented zone, sinking was temporarily discontinued, and a start was made with the cementation of the lower portion of the dolomite series. Since the end of the quarter sinking has again been resumed. The directors have accepted the conditions laid down by the British Treasury, and during the quarter 1,205 ordinary shares of £1 each have been allotted in respect of options exercised in London. The issued capital of the company has consequently been increased by £1,205, and now stands at £699,238.

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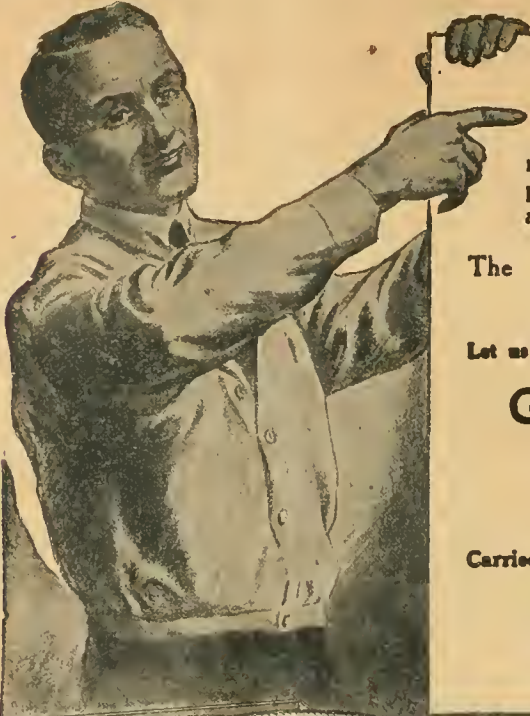
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FAR EAST RAND (SOUTH) G.M. S., LTD., ANNUAL MEETING.

THE first annual meeting of the Far East Rand (South) G.M. Co., Ltd., was held on Wednesday, the 20th inst. The chairman, Mr. H. Graumann, M.L.A., in moving the adoption of the report, in the course of his remarks proceeded to refer to the company's property. He said that it embraced 496 claims on the Van Ryn Reef on the farms Wilgepoort No. 244, and Daaspoort No. 120, south-east of Heidelberg, running for about two miles along the outcrop of the reef and being about 6 to 10 claims deep. On Wilgepoort the company has 344 claims and on Daaspoort 152 claims. The reef being worked varies in thickness from 15 to 38 inches, giving values of from 3 to 21 dwts. taken over sections. There are leaders close to the reef in the hanging wall which can be stoped with the reef when more development has taken place. He thought it might be interesting in the light of the more recent important and far-reaching Far East Rand developments to emphasize the point that these developments had greatly encouraged one to endeavour to trace and discover the Van Ryn Reef on the company's property which he, the chairman, would later on show was successfully done, besides supplying the necessary data to enable one to do so, and which data was not available some years ago, resulting in other reefs then being opened up in the district with no success and after a great deal of money had been spent and wasted, and with the further result that the Van Ryn series was neglected. To-day it is an established fact that the Van Ryn series is the great gold carrier of the Far East Rand and that this company is working on that series, where similar evidence exists as is present on the properties of the Far East Rand with the characteristics necessary to establish the identity of the Van Ryn Reef showing good and very encouraging gold values in the shafts and for a considerable distance along the strike. It is proposed to start driving from the 130 ft. level in the main shaft and to carry on development with a view to locating the rich shoots so characteristic of the Van Ryn Reef. A geological section of the country which has greatly impressed mining men of high repute, taken through these claims discloses the whole Witwatersrand beds outcropping and exposed like the leaves of a book extending from amygdaloidal diabase and Elsburg Reefs through the Kimberley Van Ryn series, and to the Hospital Hill quartzites and shales, speckled bed water tower slates, and Orange Grove quartzites. The section embraced by the company's claims includes the outcrop of the Kimberley series and what is now known to be the outcrop of the Van Ryn Reef on the footwall slates. It occurred to one connected with the vendor of the company who had worked on reefs in this area in the past that in the light of the more recent knowledge of the Witwatersrand beds there could be no doubt as to the identification of the reefs formerly worked as Kimberley Reefs, and that consequently the Van Ryn Reef should be found at the upper contact of the footwall slates as in the case of the Main East Rand basin, if these could be discovered outcropping at the back of the Kimberley shales in this area. A further search in this direction led to this discovery. The principal points which one might consider from a shareholder's point of view are: that the company's property is an extensive outcrop proposition where work can be done so much more cheaply and expeditiously and where working costs will be very much lower and the producing stage reached so much more quickly than on a Far East Rand deep level proposition, which deep level properties also entail an enormous capital expenditure. In this connection Sir Evelyn Wallers, President of the Chamber of Mines, in his evidence before the Select Committee of the House of Assembly on East Rand Gold-bearing Areas, which Select Committee sat at Capetown in 1916, said that £500,000 to £700,000 was required to sink two shafts on a 4,000 ft. deep level proposition to get to the reef before it could even be ascertained whether the reef was payable or not. Of course, all this expenditure is avoided on an outcrop proposition such as the company's, as the reef is attacked from the very grass roots. In the matter of low

working costs it may be stated that the branch railways to the South Rand Collieries passes to within a mile of the property and ensures exceptional facilities for cheap power. Then again the company's claims are held under Government claim licence and there is no further purchase price to pay or royalty to Government. In the case of many Far East Rand properties leased from Government, royalty has to be paid on a graduated scale going as high as sixty per cent. of the profits and over. The capital of the company being £75,000, it shows the claims to be capitalized at about one hundred and fifty pounds per claim, and with the exceptionally good prospects which the company has and with the very rare opportunity afforded of the chance of successfully developing an extensive outcrop Main Reef proposition one may reasonably assume that there is a very wide margin for appreciation, especially in view of the fact that the company's area represents such a long lease of life. The chairman concluded by moving the adoption of the report.

The Lonely.

The following are particulars of the output of gold, etc., for the above mine for the month of October, 1918:—Mill ran 363 hours; crushed 2,670 tons; fine gold recovered, 825·057 ozs.; value, £3,468 17s. 10d.; slimes treated, 2,670 tons; fine gold recovered, 1,732·148 ozs.; value, £7,283 17s.; total fine gold, 2,537·205 ozs.; total value, £10,752 14s. 10d.; profit, £3,026 7s. 2d. The operations for the month were very severely handicapped by reason of the influenza epidemic, but it is expected that the mine will very soon resume its normal crushing capacity.

JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY, LIMITED.

(Incorporated in the Transvaal).

Notice of General Meeting of Shareholders.

NOTICE IS HEREBY GIVEN that the Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room of the Johannesburg Consolidated Investment Company, Limited, Consolidated Building, Fox Street, Johannesburg, on TUESDAY, the 26th November, 1918, at 11 o'clock in the forenoon, for the purposes following:—

- To receive and consider the Statement of Accounts and Balance Sheet for the period ending the 30th June, 1918, and the report of the Directors and Auditors thereon.
- To elect four Directors in place of those retiring, in terms of the Company's Articles of Association.
- To elect Auditors, and to fix their remuneration for the past financial year, and to transact any other ordinary business of the Company.

By Order of the Board,

W. H. MARDALL,

Secretary.

Johannesburg,
30th September, 1918.

THE MINING INDUSTRY OFFICIALLY REVIEWED.—VIII.

Some Extracts from Annual Reports of Inspectors of Mines.

ORANGE FREE STATE INSPECTORATE (G. E. B. FROOD).

Accidents.—The accident death-rate for the year on all mines in the Orange Free State comes out at 2.66 per 1,000 per annum. A feature that attracts attention is the high proportion of cases attributed to the fault of the injured person, particularly by comparison with the Transvaal. This repeats the experience of previous years and is due no doubt to the smaller number of white gangers and overseers employed in this Province in proportion to coloured labourers. I have again this year made a classification of accidents according to the nature of the injuries received, but without disclosing any particular feature of interest on this occasion. Last year it had to be pointed out that over 42 per cent. of all the accidents had been of the nature of injuries to fingers and toes, and that such cases connoted generally occurrences not only of slight character, but also in which, according to experience, either carelessness or pure misadventure had been to blame. This year the proportion is under 12 per cent. Collieries are responsible for 12 out of a total of 16 deaths on mines, works and diggings, and 26 out of the 61 other casualties. These figures, representing a total casualty rate of 16.64 per 1,000 employees and a death-rate of 5.25, require serious comment. To the above figures, the Clydesdale Colliery contributed three deaths and five other casualties. Of these three fatalities, at least two were entirely outside questions of supervision or control, whilst the third could only be attributed to danger inherent to the work. Apart, therefore, from the numbers employed on this mine being too small to permit of any judgment being come to on the ground of mere proportion, there does not seem to be any good ground for complaint of any want of supervision or control. Much more serious is the case against Cornelia with 30 casualties, including 9 deaths, against an average total number of employees of 1,672, these figures representing casualty and death-rates of 17.94 and 5.38 per 1,000 respectively. Next to ignition of fire damp, the chief cause of casualties has been trucking; and, with regard to this, it can only be remarked that Cornelia is now an old and very large colliery, with all its workings far advanced from the main shaft and thus involving very long haulages; further, that, owing to the sharply undulating character of the seam, a large number of self-acting inclines have to be utilised, which are a considerable source of danger but at the same time a necessary evil. With the haulage of large quantities of coal under these conditions, some accidents are inevitable, though the present figures are admittedly too high. In the same way, a few accidents must be expected from sudden falls of coal; for, though the roofs are generally good, there are in parts of the pit nasty slips behind the coal which are bound to lead to trouble on occasion. The cause, however, which has led to most casualties and at the same time affords least excuse is ignition of fire damp. Such ignitions have occurred on five occasions during the year under review, with the result shown above. Gas is never detectable at the faces in this mine under ordinary working conditions, but small emanations do occur, chiefly on approaching or striking faults in the coal, which may accumulate in time to a dangerous extent if left undisturbed. According to experience, the only serious danger from this cause is on Monday morning after the mine has been at rest over Sunday. This has been recognised for some years and special and increasingly stringent precautions have been taken against it, both at the instance of this office and by the management on its own initiative. A great obstacle, however, has been presented in the tendency shown by the miners to underestimate and minimise the danger, and, strangely enough, the most experienced men have proved the worst offenders in this respect. The three most serious accidents that occurred were entirely due to this cause, and show how far obstinacy and indifference may triumph on occasion over the best laid plans and precautions and in spite of all regulations and discipline. Looking to the whole position, and bad as the case may appear against the management, I am unable to attribute any serious blame. In spite of having a difficult mine to work, the accident figures have been satisfactorily low for three years past. This year, without any change in officials or any apparent diminution of vigilance or discipline, the mine has struck a "bad patch." Few mines escape such "patches," and not many mining men will accept as less than an established fact the tendency of accidents to occur in runs or batches. We have every reason for confidence that normal conditions will now be resumed, and I venture to think that, in the meantime, any wholesale condemnation of the mine on the bad results of one year is to be rather deprecated.

Labour.—Chiefly owing to the gradual increase in diamond mining operations, there has again been a large addition to the total labour employed, though the figures are still a long way short of normal.

White Labour.—Owing to the large number of employees still continuing on military service, there has been a dearth of skilled labour, especially good mechanics.

Coloured Labour.—The coal mines continue to derive great benefit from the improved stamp of native they have been able to attract, consequent upon better conditions of treatment. Last year it was pointed out that in spite of higher wages and shorter hours the results were all to the good. This result is strongly substantiated by this year's figures, which show that with only 80 more boys on the average employed, no less than 80,519 tons more coal have been sold. A further example of the benefit derived from providing for the natives in a way to satisfy their needs and requirements is provided by Jagersfontein which since the restart of operations early in 1916

has obtained all its native labour entirely free of recruiting expenses. Everywhere, except for a month or two on the smaller diamond mines, the supply of coloured labour has been satisfactory. Except for a small outbreak of disorder at White's Cement Works, which was quelled without much difficulty, no trouble has been experienced.

Mortality from Disease on Mines.—Against averages of 538 white and 4,718 coloured persons employed on the mines throughout the year, the deaths from disease or natural causes of 1 white and 71 coloured have to be recorded. The gross mortality represented is 13.51 per 1,000. This figure is higher than last year, but lower than the average when the mines are working under normal conditions.

Machinery.—It gives great satisfaction to be able to point to the fact that after six years of somewhat interrupted, but generally strenuous, work, the whole of this Province has at last been brought under control as regards inspection of machinery. Doubtless some boilers have escaped attention, and arrears of routine work may have accumulated, but the great point is that the inspectors can now feel that they have the whole situation thoroughly in hand and that a complete and satisfactory supervision of the whole Province is now well within sight. In the above connection I think a debt of gratitude should be acknowledged to the motor-car, as with any other mode of conveyance it is hard to see how and when the work could ever have been accomplished. In addition the results must be satisfactory from the economic point of view, especially in the saving of the inspectors' time and consequent increase in their efficiency.

Diamonds: Mines.—Except for an appreciable increase in the number of whites employed, there is no improvement in the position during the year. In the matter of production, the tendency has rather been to tail off latterly, though this has really no significance beyond indicating that things have been slack at Jagersfontein and Koffyfontein, which two mines dominate results in this Province. At neither Jagersfontein nor Koffyfontein has any actual mining been done during the year, both companies having continued to secure their outputs by washing from the stocks of "blue" on the floors, and their accumulations of lumps and hardbank at surface. Active operations have continued throughout the year at Blaauwbosch and New Eland, but for some time the former was severely handicapped by machinery troubles. Monteleo has also made a substantial contribution to the output. At the end of the year Jagersfontein was ready to restart underground mining. A very fine new treatment plant had been designed to be ready about the same time, but it became necessary to postpone construction till after the war. However, it has been found possible to improvise a plant, largely from old material on the mine, which should prove capable of treating 10,000 loads of "blue" direct from the mine monthly. This, with the assistance of the other crushing plants now operating, should permit of the company maintaining an output proportionate to its proper place in the industry. In view of the restart of underground mining and the increase in production just referred to, it need scarcely be said that the outlook at this mine is much brighter for next year. Its accumulations of hardbank and lumps have proved somewhat of a bonanza to the Jagersfontein Company these last two years, the former alone being estimated to yield a profit of between £350,000 and £400,000. At Koffyfontein an attempt is now being made to realize old assets in a similar way. The output from Koffyfontein continues to be closely restricted, and there is no definite promise of improvement.

(To be continued.)

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THE WEEK IN THE SHAREMARKET.

Continued Stagnation—A Slump and Partial Recovery.

THE stagnation still continues. At Saturday's call all the favourite stocks were again lower. New Modders came sellers at the previous day's buying price. It is difficult to understand the true cause of the present position, one of the best reasons given, however, is that there is nothing in which the public is specially interested. Prices have advanced in all the best class of stocks; investors have got all they require and there is nothing to tempt speculation. Monday's call was an outing for the small fry which displayed the only pretence at activity. There was also an advance in Southern Van Ryns. On the other hand, nearly all the better class stocks were again lower. A congratulatory cable was received from the chairman of the London Stock Exchange, and it may be hoped that normal business across the water will be resumed before long. Not a single quotation was made at the opening on Tuesday. At the call, however, the stagnation that has prevailed of late came to an end and something like a banging of all the leading stocks took place, the first sales all being lower than the previous day's quotation, followed in most instances with two further drops. The two exceptions were Mines Selections and Consolidated Main Reefs. No reason can be ascertained for the slump beyond the possibility that holders have got tired of the prevailing inaction, or, as an alternative suggestion, more market manipulation on the principle of stepping back to jump further. The slump stopped with the end of the call, when buying up of Springs and Government Areas commenced, the former recovering to 66s. 6d. and the latter to 90s. 6d. Modder East Options continued weak with sales and sellers at 19s. The three-year Options fell to 5s. On Wednesday morning the volume of business was greatly reduced, but prices kept approximately at the previous day's closing level, with an additional improvement in Springs Mines. Except for a weakening in Springs Mines there was little alteration in the price of gold stocks on Thursday morning. Tins, as represented by Leeuwpoots and Rooibergs were lower. Industrials, such as Pretoria Cements, Hume Pipes and Alkalies, shared the same fate. Alkalies one can understand, but it is hardly likely that early imports will affect the value of the other two. The outside business of the week was limited to:—Sales: Union Tins, 7s. and 6s. 9d.; Phoenix, 1s.; Montealeos, 26s.; Makganyene Diamonds, 32s.; and Sakalavas, 7s. for odd parcels. Buyers and sellers of Henderson Estates, 5s., 5s. 6d.

The following changes in prices on Friday morning indicate a further weakening of the market:—Sales: Apex, 7s. 1d.; African Farms, 15s. 8d.; Leeuwpoot, 25s. 6d.; Lydenburg Farms, 8s. 7d.; Lace Props, 12s. 6d.; Kleinfonteins, 11s. 6d.; Southern Van Ryns, 12s. 3d.; Sub Nigels, 26s. 6d.; Springs, 66s. 3d.; Zaaipplaats, 14s. 9d. Buyers and sellers: Coronation Colliery, 47s. 6d., buyer; Hume Pipes, 27s. 6d., buyer; Modder Bs., £7 12s. 6d., £7 17s. 6d.; Randfonteins, 15s., 15s. 6d.; Village Deeps, 17s., 17s. 6d.; Wit. Deeps, 12s. 9d., 13s. 6d.

	Fri., 15th.	Sat., 16th.	Mon., 18th.	Tues., 19th.	Wed., 20th.	Thurs., 21st.
African Farms . . .	16 6	16 3*	16 6†	15 8	16 0*	16 0
Anglo-Amer. Corp. . .	—	—	—	32 6†	—	32 6†
Apex Mines . . .	7 6†	7 3†	7 1*	7 1	7 1*	7 0*
Aurora Wests . . .	—	—	—	—	—	8 0*
Bantjes Consolidated . .	—	2 6*	2 6*	2 6	2 6*	2 6*
Brakpan Mines . . .	71 0*	71 3*	71 0*	71 0	70 0*	70 0*
Breyten Collieries . .	10 6*	10 6*	10 0*	11 3*	11 0*	—
Brick & Potteries . .	—	3 9*	—	3 9*	3 9*	3 9*
British South Africa . .	21 6†	21 6†	—	—	—	—
Bushveld Tins . . .	0 8*	0 10	0 10*	0 10*	0 10*	0 10*
Cassel Coals . . .	37 6*	37 6*	37 6*	—	37 6*	37 6*
Cinderella Cons. . .	4 9*	4 9*	4 9*	4 9*	4 9*	4 9*
City & Suburbans . .	—	—	8 3*	8 6	8 6	—
City Deeps . . .	52 0*	52 3	51 3*	50 0*	50 6*	50 6
Clydesdale Collieries . .	—	20 0*	20 0*	20 0*	20 0*	20 0*
Con. Investments . .	—	21 0*	—	22 6†	20 0*	—
Con. Langlaagtes . .	—	—	20 0†	20 0†	—	—
Con. Main Reefs . .	12 0*	12 6	12 6*	12 9*	12 9*	12 6*
Con. Mines Selec. . .	25 0*	—	—	—	—	—
Coronation Collieries . .	—	—	—	45 6*	46 0*	45 0*
Coronation Freeholds . .	1 0*	1 6	1 8	1 4*	1 3*	1 3
Crown Diamonds . .	4 0*	4 6*	4 0*	4 0*	4 0*	4 0*
Crown Mines Deb. . .	£100*	£100*	£100*	£100*	£100*	£100*
Daggafontein Mines . .	24 6†	23 9	23 9	23 0*	23 0*	23 0*
Do. Options . . .	6 0†	6 0†	5 6	5 3	5 6†	5 6†

	Fri., 15th.	Sat., 16th.	Mon., 18th.	Tues., 19th.	Wed., 20th.	Thurs., 21st.
East Rand Coals . .	2 2*	2 1*	2 2	2 1*	2 2*	2 1*
East Rand Deeps . .	—	—	0 10*	—	0 10*	0 10*
E.R. Minings . . .	18 0*	18 0*	19 0†	17 6*	17 6*	17 6*
East Rand Props. . .	5 9	6 0	5 9	5 6*	5 11*	5 6*
Eastern Golds . . .	1 7*	1 7*	1 9	1 9†	1 9	1 7*
F. Smith Diamonds . .	3 8	3 3*	3 6*	—	3 6	3 3*
Geduld Props. . . .	36 6	36 3	36 0*	35 0	35 3	35 6*
Glencairns	1 3*	1 3*	2 0†	2 0	2 0	2 0*
Glencoe Collieries . .	—	—	—	6 0*	—	—
Glynn's Lydenburgs . .	24 3*	24 6*	24 6*	24 0*	24 0*	24 0
Union Corporation . .	—	—	—	15 0*	—	—
Government Areas . .	96 0*	90 0*	90 3	89 3	90 6*	90 3
Jhb. Bd. of Executors .	27 6*	27 6*	—	28 0*	28 0*	28 0*
Jupiters	5 0*	5 0	4 10*	4 6*	—	4 4*
Klerksdorp Props. . .	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Knight Centrals . . .	5 3	5 1	5 2	5 0	5 1*	5 2*
Knights Deeps	6 0*	—	6 0*	6 0*	6 0*	6 0*
Lace Props.	12 6	12 6*	12 9*	12 6†	12 6	12 6*
Leeuwpoot Tins . . .	—	29 0†	28 6	—	28 6†	27 6
Luipaardsvlei Est. . .	—	—	—	—	1 0*	1 0*
Lydenburg Farms . .	8 9*	8 6*	8 6*	8 6*	8 7*	8 6*
Modder B's	157 6*	157 6*	157 6	—	157 6*	159 0†
Modder Deep	148 0*	149 0*	148 0*	147 6*	147 6*	148 6*
Modder Easts	20 4*	20 4†	20 4*	19 9	18 9*	18 9*
Do. Options (3 yrs.) .	5 11	5 6*	5 9	5 0*	5 3*	5 4†
Do. Options (4 yrs.) .	6 9*	6 6*	7 0†	6 0*	6 3*	6 0*
Hume Pipes	34 0†	—	32 0	31 0	30 0*	30 0
Natal Navig. Col. . .	—	—	20 0	20 0*	20 0*	20 0*
National Banks . . .	—	—	—	£14*	£14*	£14†
New Boksburgs . . .	0 10*	0 10*	0 10*	0 10*	0 10†	0 11*
New Eland Diam. . .	25 0	24 0*	—	25 0†	25 0†	—
New Era Cons. . . .	10 0*	10 0	10 0*	10 0*	9 9*	9 9*
New Geduld Deeps . .	5 9*	5 9*	5 9*	5 8*	5 8*	5 10†
New Heriots	12 6*	—	12 6*	12 6*	12 6*	12 6*
New Kleinfonteins . .	13 0	12 9*	12 6*	12 6*	12 3	12 0
New Modderfontein . .	£26½	£26½*	£26 6*	£26½†	£26½*	£26½†
Nigels	5 0*	5 9*	—	6 3†	6 0†	6 0†
Nourse Mines	16 6*	—	—	—	16 0*	16 6*
Pretoria Cements . .	70 0†	70 0†	74 0†	68 6†	65 6*	65 0
Princess Estates . . .	3 1*	3 0*	3 2	3 0*	3 0*	3 0
Rand Collieries . . .	2 9*	3 0*	—	2 9*	2 9*	2 9*
Rand Nucleus	1 5*	1 5*	1 5*	1 4*	1 7	—
Rand Select. Corp. . .	80 0*	—	81 0	82 6	—	—
Randfontein Deeps . .	5 3*	5 6	5 6*	5 3*	5 3*	5 3*
Randfontein Est. . .	15 3*	15 3*	15 0*	15 3*	15 6*	15 6*
Rooibergs	9 2*	9 0*	9 3*	9 0*	9 0*	8 6
Rooipoort Uniteds . .	—	2 6*	3 0†	—	3 0†	—
Rose Deeps	—	—	10 6†	—	19 6†	—
Ryan Nigels	3 3*	—	3 3*	3 3*	3 3*	3 3*
Shebas	1 0*	1 0*	1 0*	1 0*	1 3	1 3*
Simmer Deeps	2 0†	—	2 0	—	—	1 9*
S.A. Breweries	31 0*	34 0†	31 0*	34 0†	32 6*	—
S.A. Lands	6 7	6 3*	6 2*	6 6	6 3*	6 3*
Springs Mines	69 0	68 6	67 9	65 6	67 3	66 0
Sub Nigels	27 6*	27 6	27 3	26 6A	26 3*	26 9*
Swaziland Tins . . .	—	—	—	—	30 6†	30 0†
Transvaal Lands . .	25 0	24 3*	25 0*	25 0	25 0†	23 6
Trans. G.M. Est. . .	14 6	14 3*	14 6†	14 6	14 6†	14 6†
Van Ryn Deeps . . .	70 0*	70 0	69 9	69 0	68 6A	68 6*
Village Deeps	16 0*	16 6*	—	15 0*	—	15 9*
Wit. Deeps	13 9*	13 9*	14 0*	14 0*	14 0	—
Woluhuts	3 3*	3 3*	3 0*	3 1*	3 0*	3 0*
Zaaipplaats Tins . . .	15 6	15 3*	15 2	15 0	15 1½	15 0*
Union 5 per cent. . .	£102½*	£102½	£102*	£102½*	—	£102½*
New States	20 0*	20 0	20 0*	20 1½	20 1*	20 1*
S. Van Ryn	12 6*	12 3	13 6	12 6	12 6	12 6
S.A. Alkali	46 0*	46 0*	46 3*	44 0	46 0†	40 0*
West Springs	24 9	24 9	24 6	23 6	23 9*	23 16*

*Buyers. †Sellers. AOdd lots. BEx London.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Shareholder" (Capetown).—The deal, we are officially informed, is off.

"W. H." (Langlaagte).—We should leave the venture alone.

"Interested."—The scheme, held up during the war, is now being reconsidered. We hope to print full particulars shortly.

"Perplexed" (Krugersdorp).—(1) Why sell when the prospects seem to be improving? (2) It might be advisable to spread your investments by going in for one of the other Far East Rand stocks.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Business Problematical—Chief Buyer Marking Time—The Lower-Grade Mines—Thousand Million Worth of Stores—Iron and Steel—The Shipping Problem.

A GREAT difficulty was experienced in ascertaining the real position of business. A manager of a large and important firm practically declined to talk about things, as prices were so uncertain and sellers predominated, and yet as a rule there were very few bargains offering. Hence he was puzzled as to the immediate future. Fortunately a visit was made to the Chief Buyer's office, where it was ascertained that this department was marking time and practically doing no new business unless in a few exceptional cases. Cables had been sent to London for the purpose of unravelling points mentioned in Reuter's cables, more particularly where it stated that "Iron and steel will be released from the British Government's control forthwith, and other metals within a period of seven months." So far replies have not been received to the various queries sent, and naturally as regards iron and steel that is an important question for the mining industry. Now that one has positive information the chief buying office is marking time, it accounts for much that otherwise could not be understood. An explosive manufacturing house has also cabled in reference to what it actually means about the British Government supplying explosives at a cheaper rate for the lower-grade mines, without so far obtaining any reply. The question of the lower-grade mines is still a burning one, as Sir Lionel Phillips only gave them to Christmas unless the British Government gave some assistance. Much hope in this direction is still uppermost in men's minds, but a responsible mining magnate is doubtful now the armistice is an accomplished fact.

£500,000,000 WORTH OF STORES.

The cable news also stated that "The Ministry of Supply will replace the Ministry of Munitions to control the disposal of war stores valued at five hundred millions sterling." This is nearly the amount of the British National Debt a couple of years before the war, but figures in pre-war days are pigmies as compared with the present fabulous totals. If Britain alone has five hundred millions of stores to dispose of, the other Allies and America would also collectively have at least a similar quantity. Hence one thousand millions of stores to be placed on the world's markets is a factor in the future trade of the world that cannot be ignored. Again, it is said upon excellent authority that the Hamburg wharves are full of goods, more particu-

larly all kinds of enamel ware, especially household utensils. This may explain one of the conditions of the armistice that German merchantmen cannot be allowed to sail the seas until peace is actually signed. This is certainly a knotty problem, but one that has to be faced, as the Allies are nursing them back to convalescence with foodstuffs. How far will they go in commercial matters is a very critical subject to even whisper about at the present juncture, but there it is.

IRON AND STEEL.

During the war Great Britain increased its steel output from $7\frac{1}{2}$ to 12 million tons per annum, and it is the intention to further increase this. Whilst it is difficult to ascertain prices, yet it is understood that they are inclined to ease in bar iron and mild steel, as so much is *en route* from America and Canada. The wharf charges in New York and other ports are to-day a big item on the top of original costs, representing in some cases anything up to one hundred per cent., which was one of the reasons why a special effort was made to clear the American goods destined for South Africa. Obviously if the British Government has released its control over the iron and steel trade it means turning the works from war production to mining and commercial necessities. That may decrease landed costs into South Africa, chiefly because of there being little or no war risks insurance, also the probability of decreased freight, but not much in the cost of manufacture if it is correct that the present scale of war wages in Britain is to continue for seven months owing to the high cost of living.

TIMBER AND BUILDING MATERIAL.

The Swedish timber dealers seem marking time, as very few cables are available. These only disclose that the exchange is more favourable to London, being now 19s. for the English sovereign. There has been no drop in freight and nothing in that way is expected until peace is actually signed. Naturally that is a matter of opinion, but what seems to be the fact is that the speculative element is absent both in Sweden and here. Deals are a penny per foot and flooring a farthing cheaper. Stock bricks are plentiful, as business went flat during the influenza period and has never recovered and may not until the turn of the year. Of course, there are a number of places, especially business premises in Johannesburg in the course of construction, but chiefly in the finishing stages.

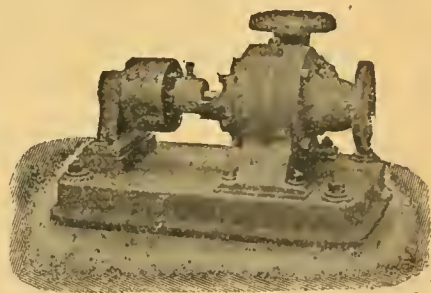
ALFRED F. ROBINSON, LTD.,**17/19 & 22, Southern Life Buildings, JOHANNESBURG.**

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P.O. Box 3228, Johannesburg.

Phone No. 3516.

Telegrams: "ALPHA."

**THE SHIPPING PROBLEM.**

As previously remarked, the American shipping position is easier chiefly in consequence of so many sailing vessels being brought under requisition, also some half dozen steamers are known to be on the way. The British position is not so clear at present, for although that Government has given notice that they will release private ships, yet the date is uncertain. This news created the idea of a decent drop in shipping rates, but it seems a little premature; however, an easing off must come now the routes are free of submarines, also the lesser insurance and minor charges will count. The present freights from Southampton to the Cape are £6 5s. first class, and £4 5s. for second class goods. The war insurance before the armistice was 60s. and immediately afterwards 30s., and now 5s. From America the rates were just half the British insurances. There is a little indicator of what will happen after peace, and that is the Japanese boats are already cutting into the American trade rather pronouncedly, as they are loading more and more between America and South Africa. Wherever freight is fairly regular private enterprise is sure to fill up a gap, therefore the regular liners, whilst monopolising the bulk of the trade, may have to contend with outside ships for a long time to come. It must always be remembered, however, that when the private ships are handed back by the British Government, most of them will require a lot of overhauling, because when on war work there was plenty of coal to push them along and often the machinery was of secondary importance to speed when getting away from a submarine. Hence delays may occur before our South African route is anything like what it was in pre-war days.

THE TREND OF BUSINESS.

One can hardly remember when business was in such a state of standstill. If anything, prices keep up and even become harder, as cables arrive stating that values are better in Britain because when the Government release their hold on factories, prices will increase. The explanation is that many factories have been restricted to profits up to 20 per cent., which is not considered sufficient, therefore when the control is off the prices will ascend. One cable received states not to sacrifice, as their particular line was increasing in value. Several similar statements have been received also with addition that no goods can be supplied until well into next year. A Canadian reply as to nails said none could be had until the autumn of 1919. It is said on excellent authority that one cable contained an offer from the British Government to the Cape Government Railways of a million pounds' worth of trucks, vehicles and stores. All these things have to be taken for what they are worth, but one thing has to be reckoned for is that the whole manufacturing world's eye is upon the South African market, chiefly on account of our gold and diamonds. Hence what is arranged to-day or looked for may not be depended upon

when our flood gates are open to all the world's trading and competition. There has been much concern in town as to how the armistice terms would be carried out, but now a start has been made with the shipping, as well as the occupation of territory, a better feeling of confidence prevails.

REVISED PRICE LIST

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 1s. 11d. to 2s. 1d.; flooring, $4\frac{1}{2}$ x $\frac{3}{4}$ and 6 x $\frac{3}{4}$, 11d. to 11 $\frac{1}{2}$ d. per sq. ft.; ceilings, 6 x $\frac{1}{2}$, 7d. to 7 $\frac{1}{2}$ d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, $\frac{1}{2}$ in. x 12in., 1s. 4d. per foot; 1in. x 12in., 1s. 8d.; teak, 25s. to 27s. 6d. per cubic foot; shelving, 1s. 3d.; Jarrah, 14s. 6d. cu. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 1s. 11d. to 2s. per ft.; beaver boards, 11d.; galvanised iron, 24-gauge, 6ft. to 10ft., 2s. to 2s. 1d.; 11ft., 2s. 2d.; 12ft., 2s. 3d.; 26-gauge, 6ft. to 8ft., 1s. 9d.; 9ft. and 10ft., 1s. 10d.; flat galvanised, 24 a 26-gauge, 95s. 100lb.; floor brads, 97s. 6d.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s. 2/4 1-5 galls.; 10-1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, $\frac{1}{4}$ in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31 $\frac{1}{2}$ per ton; tallow (local), 8 $\frac{1}{2}$ d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate (Japanese), 14/6 lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 11lb.; horax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; nitbarg (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6 $\frac{1}{2}$ d. lb.; plumbago crucibles, 6 $\frac{1}{2}$ d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. vd.; 3/20 coils wire 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 50s. to 55s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3 $\frac{1}{2}$ in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, $\frac{1}{2}$ in. and 3-16in. round iron, 95s. to 100s.; $\frac{3}{4}$ in. do., 85s.; $\frac{1}{2}$ in. steel, round, 80s.; $\frac{1}{2}$ in. round iron, 85s.; do. steel, 72s. 6d.; $\frac{3}{4}$ in. round iron, 72s. 6d.; do. steel, practically none in town; $\frac{1}{2}$ in. round iron, 65s. to 67s. 6d.; $\frac{3}{4}$ in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunswart local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, $\frac{1}{2}$ in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; $\frac{3}{4}$ in. diameter up to 3in. long, 1s. 9d. lb.; $\frac{3}{4}$ in. dia., 1s. 6d., 3 $\frac{1}{4}$ in. and up long 1s. 6d. lb.; $\frac{1}{2}$ in dia. up to 2 $\frac{1}{2}$ in long, 77s. 6d. 100lb.; $\frac{1}{2}$ in dia. and 2 $\frac{1}{2}$ in up long, 75s. per 100lb.; $\frac{3}{4}$ in. diameter up to 2 $\frac{1}{2}$ in. long, 85s. per 100lb.; $\frac{1}{2}$ in. dia. 2 $\frac{1}{2}$ in. and up long, 60s. per 100lb.; $\frac{3}{4}$ in. diameter, 2 $\frac{1}{2}$ in. and up long, 55s. 100 lb.; $\frac{1}{2}$ in. and 1in. diameter, same price as $\frac{3}{4}$ in. diameter; nuts, $\frac{3}{4}$ in., 1s. 3d. per lb.; $\frac{1}{2}$ in., 85s.; $\frac{3}{4}$ in. 95s.; 1 $\frac{1}{2}$ in. and 1 $\frac{1}{2}$ in., 85s.; 1 $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; $\frac{1}{2}$ in., 5-16in., 1s. 6d. lb.; 7-16in., $\frac{3}{4}$ in., 1s. 6d. lb.; $\frac{1}{2}$ in., 75s. to 80s.; $\frac{3}{4}$ in., 72s. 6d.; $\frac{3}{4}$ in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5 $\frac{1}{2}$ d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction kinoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

New Patents.

618. Athol Ernest Neville Lawrence.—An improved hammer or striker for pianos and similar instruments.
619. Bernard Rothschild.—Improvements in conveying by air pressure sand, grain, ash, coal, sawdust and the like.
620. Arthur Newton-Smith.—Improvements in or in connection with the picking mechanism of looms.
621. Arthur Newton-Smith.—Improvements in picking mechanism for looms.
622. Arthur Henry Lynn and Niels Edward Rambush.—Improvements in the ammonia recovery producer gas process, and apparatus therefor.
623. William Wilkie.—Improvements in machines for pressing the seams and sages of cloth and the like of various parts of wearing apparel during the process of manufacture.
624. Richard Owen Jones.—Improvements in means for removing scale or incrustation from the interior of tubes, pipes, and the like.
625. Noel Yeo Robertson and Herbert Moss.—Improvements in means for indicating the actuation of mechanism such as water blasts in the construction of water blasts.
626. British United Shoe Machinery (South Africa), Limited.—Improvements in or relating to boot or shoe finishing or ornamenting machines.
627. William Davis Collins and Victor Fallon Feeny.—Improvements in and relating to carburetters.
628. Vickers, Limited.—Improvements in or relating to sewing machines.
629. Vickers, Limited.—Improvements in or relating to scwing machines.
630. Harry Clarence Sherman.—Improvements in operating upon tins.
631. Francis William Simpson and Robert Simpson.—Improvements in presses for pressing food, such as cheese, meat, fruit, and the like.
632. James Wilshir.—Improvements in mountings for rock drills.
633. James Wilshir.—Improvements in mountings and feeding devices for rock drilling machines.
634. Edwin Henry Turnpenny.—An intermittent moving picture without mechanism.
635. A. Bradley.—A continuous conveyor retort for distillation, carbonisation, wasting, etc., of coal, etc.
636. South African Alkali, Limited.—Improvements in recovering salts from another liquor by evaporation.
637. William Edwin Nettle, Paul Selby, James Blythe, and Joseph Henry Holman.—Improvements applicable to reciprocating rock drills for supplying water to the boreholes during drilling.
638. J. O. Lehman.—Improved combination of step ladder, ironing board-table, table, and the like.
639. George Charles Chadwick.—Improved means for unloading coal or other suitable goods from vessels.
640. John William Platt.—Nuho.
641. John George Robinson.—Improvements in or relating to steam superheaters for locomotive, marine, and other boilers.
642. Harry Brearley.—Improvements in or relating to articles manufactured of steel.
643. Gogu Constantines Co.—Improvements in speed indicating devices.

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Suitable for all Driving and Conveyor purposes. Thoroughly proof against dampness, changes of Temperature and uneven action. :: :: :: ::

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Rhodesian Section.

RHODESIAN MINERAL OUTPUT FOR SEPTEMBER.

WE have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of September, 1918, with comparisons and values:—

MATABELELAND.

BULAWAYO DISTRICT.

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Abercorn (W. J. Lane)...	5	325	263.37	1,092
Do. (sands) ...	—	450	245.34	1,017
Addie Iris (H. A. D. Tansley) ...	2	45	28.29	117
Allee (R. J. Howel) ...	2	240	25.37	105
Annasona (Rhodesia, Ltd.) ...	3 1P	322	229.98	953
Do. (sands) ...	—	458	159.73	662
Antelope G.M. (Rhod.) Co. ...	2BM 1T 8P	3,770	705.41	2,992
Do. (sands) ...	—	3,468	949.38	4,027
Bapaume (A. W. Wilson) ...	3	168	192.90	800
Big Ben South (W. E. Hunt) ...	2	150	62.93	261
Bill's Luck (W. Arbery) ...	5	390	50.92	211
Bothal (W. H. Robinson) ...	5	118	23.42	97
Bushlick Mines, Ltd. ...	8N 3T 15	5,950	—	—
Do. (sands) ...	—	3,394	1,122.28	4,652
Do. (slimes) ...	—	2,376	—	—
Do. (concentrates) ...	—	280	—	—
Camp (Carson Mines, Ltd.) ...	5 1P	610	120.12	498
Do. (sands) ...	—	400	43.44	180
Cam Stick (Iron Duke Synd. No. 2) ...	—	150	24.57	102
Celtic (Trans. & Rhod. Estates) ... (10) (2P)	—	400	90.00	373
Do. (sands) ...	—	400	30.00	124
Confidence (A. D. Hall), August ...	(5)	245	43.17	179
Do. September ...	5	394	38.10	199
Cornwallis (E. Frankis) ...	3	23	4.95	20
Criterion (M. T. McEwen) ...	5	478	34.99	145
Durban (Durban Synd.) ...	5	400	284.93	1,181
Do. (sands) ...	—	270	81.19	337
Eagle 2 (E. Sutherland), pannings ...	—	—	4.42	18
Eagle Hawk (T. Berwitz) ...	5	280	98.73	409
Farvic (H. S. Henderson) ...	5	480	183.92	780
Do. (sands) ...	—	300	31.47	133
Flora (E. A. Machell), August ...	(5)	175	72.44	300
Do. September ...	5	252	94.09	390
Do. (sands) ...	—	360	6.91	29
Fred (Trans. & Rh. Estates, Ltd.) ...	10 2P	1,700	984.74	4,062
Do. (sands) ...	—	1,700	157.52	653
Germania (A. G. Haddingham) ...	2N 2P	910	332.52	1,379
Do. (sands) ...	—	910	318.12	1,319
Do. adjustment, Nov. and Dec., 1917 ...	—	—	—	85
Horn (Horn Reef Synd.) ...	5 1P	380	147.52	612
Do. (sands) ...	—	276	—	—
Jessie (Jessie Tributors) ...	10 2P	1,110	304.86	1,264
Do. (sands) ...	—	522	25.13	104
Jumpers (J. P. McCay) ...	5	377	149.38	619
Do. (sands) ...	—	252	22.56	94
Killarney (Roscoe and Pini) ...	5	490	236.89	982
Lonely Reef G.M. Co., Ltd. ...	20 3T	4,950	1,628.44	6,751
Do. (slimes) ...	—	4,950	2,954.43	12,247
Marlish (C. A. Abbot) ...	2	80	8.05	33
Matabele Queen's Co., Ltd. ...	10 2P	1,250	381.06	1,580
Do. (sands) ...	—	1,250	125.76	521
Mount Rosa (R. J. Maidwell), Aug. ...	(3)	56	21.96	91
Do. September ...	3	28	13.29	55
Napoo (H. Ashburner) ...	3	50	22.27	92
Nev Eclipse (J. R. Stewart) ...	5 1T	1,056	349.56	1,449
Do. (sands) ...	—	756	44.73	186
Newtonfontein (A. H. Newton) ...	3	375	237.18	983
Do. (sands) ...	—	240	72.61	301
Nicholson (G. Black), clean up ...	—	—	8.07	33
Old Nic (Charterland & General E. & F. Co., Ltd.), adjustment Nov. 1917 ...	—	—	—	17
Oxon (Iron Duke Synd. No. 2) ...	5	70	16.01	67
Do. (sands) ...	—	50	2.70	11
Pannings (G. Johnson), old plates ...	—	—	2.24	9
Red Rose (F. C. Barrett) ...	10	150	181.83	754
Rewi (Intabanenda Synd.) ...	5	298	115.97	481
Sabi (Fletcher and Williamson) ...	20	1,600	164.90	684
Do. (sands) ...	—	1,025	142.92	582
Tartan (G. Leach) ...	5	65	13.72	57
Wit Boy (Wit Boy Syndicate) ...	5	290	97.83	406
Do. (sands) ...	—	220	12.73	53

Bulawayo District total ...

14,654.26 61,029

No. of
stamps.

Tons
treated.

Yield.
Ozs.

Value.
£

GWelo DISTRICT.

Acacia (W. and G. Hogg) ...	2	165	92.10	382
Babs (Beach and Boby) ...	H	360	319.26	1,324
Bell G 96 (Brunton and Turner)— clean up, May ...	—	—	16.96	70
Chicago 2 (A. Fraser) ...	3	120	19.72	82
Chimborazo (Wonderland Trib. Synd.)	5 1P	465	164.82	738
Do. (sands) ...	—	354	59.52	247
Commonage (H. W. Gray) ...	1T	240	34.13	141
Connemara (Connemara Synd.) ...	20	2,840	144.65	600
Do. (sands) ...	—	2,104	683.97	2,835
Do. (slimes) ...	—	736	106.40	441
Do. adjustments, Oct., 1917 ...	—	—	—	6
Csardas (Wolfshall Synd.) ...	10	490	264.36	1,096
Danga (Wonderland Trib. Synd.) ...	5 1P	200	70.72	293
Dream (Masham Synd.) ...	3	200	38.51	160
Emerald (F. M. Linscott), July ...	5	274	36.32	151
Do. August ...	—	500	44.66	185
Falcon Mines, Ltd. ...	27 N 2T	11,977	2,766.21	12,931
(Copper and silver returns not given.)	—	—	—	—
Fed Up (A. Malcolm) ...	5	226	134.87	559
Gaika G.M. Co., Ltd. ...	5 1C 1T	3,396	697.57	2,962
Do. (sands) ...	—	3,960	588.75	2,497
Globe & Phoenix G.M. Co., Ltd. ...	40 12P	6,264	5,931.71	24,913
Do. (sands) ...	—	9,599	1,523.70	6,400
Do. (slimes) ...	—	2,304	604.72	2,540
Gothic (Murray and Kennedy) ...	10 1P	412	95.29	395
Do. (sands) ...	—	218	62.18	258
Jutland (H. C. Phillips), August ...	(3)	45	31.09	129
Do. September ...	—	50	22.59	91
Loyalist (B. Bertoldi), sands ...	—	427	47.72	198
Moss (W. M. James) ...	5	1,020	314.07	1,302

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Where it's a Difficult Drive.

Fit a belt you know will do
the work, and that must be a
"TULLIS BELT."

"Chonata" BRAND Balata.

(Driving and Conveying)

"St. Ann's" BRAND Leather.

"Swan" BRAND Waterproof.

(Single, Double and Treble)

"Homogene" BRAND Laminated.

"Viking" BRAND Launder Lining.

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Nevada G (F. C. Luxat)	H	850	84.71	351
Do. (sands)	—	450	17.24	72
New Waza Waza (Est. T. Pedlow)	5	30	26.14	108
Do. clean up	—	—	3.30	14
Northallerton (I. Malcham), August	(5)	135	47.93	199
Do. September	5	155	45.48	188
Robin Hood (Gaika G.M. Co., Ltd.)	1C 1T	29	29.11	122
Royalist (J. Austen)	5	625	269.87	1,119
Rutland (H. K. Havnar)	2	60	44.82	186
Second Trial (J. Rainsford)	2	12	1.92	8
Smith's Pocket (R. C. Smith)	5	442	40.27	167
Snark (J. G. Walter)	5	28	16.05	66
Tebekwe (A. N. Tyrell), sands	—	1,000	60.40	250
Do. (T. Kerr), clean up mill site	—	—	17.42	72
Trixie B (S. Levin)	5 1P	560	146.55	608
Umpali (Smith & Wood), clean up ...	—	—	3.86	16
Veracity (L. R. Evans)	5	600	160.22	664
Do. (sands)	—	600	33.91	140
Wanderer (Selukwe) G.M., Ltd. ...	4GR	15,770	1,070.00	4,436
Do. adjustment, 1917	—	—	—	14
Yankee Doodle (C. Brunton), clean up	—	—	23.86	99
Zabonkwe (Holmes and Urquhart) ...	5	660	—	—
Do. (sands)	—	508	168.33	698
Do. (slimes)	—	152	—	—
Gwelo District Total			17,228.18	73,571

MASHONALAND.

HARTLEY DISTRICT.

Acorn (Anzac Synd.)	5	406	140.28	582
Do. (sands)	—	304	64.17	266
Aisleby (J. C. White) Aug. (pannings)	—	—	0.80	3
Bucks (H. F. Wilson), August	(5)	117	21.22	88
Do. September	5	62	8.61	36
Cadorna (Attalio & van Breda)	2	80	22.20	92
Cam and Motor G.M. Co., Ltd. ...	RP	11,078	3,302.24	14,002
Do. (slimes)	—	3,280	271.00	1,149
Do. adjustment (slags)—				
February & May, 1917	F	—	14.25	13
September, 1917	—	—	—	86

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	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
Cissy (J. E. F. Poulton)	2	93	48.27	200
Eiffel Blue (Willoughby's Con. Co., Ltd.)	10	1,310	440.21	1,825
Do. (sands)	—	720	33.95	141
Do. (Tailings, Ltd.), slimes	—	503	37.65	156
Eileen Alannah Mining Co.—				
Adjustment (slags), Dec., 1917 ...	1'	—	—	39
Euney Ext. (E. G. Goodyer), August	5	277	89.61	371
Do. (sands), August	—	400	21.46	89
Etna and Tsessesbe (Macfadan and				
Clesham), August	(C)	556	136.30	565
Do. September	C	440	105.15	436
Glasgow Mines, Ltd.	5	424	98.07	407
Do. (sands)	—	225	26.46	110
Do. adjustment (slags)	F	—	—	1
Golden Valley (John Mack & Co.)	10 1P	1,091	376.57	1,561
Do. (sands)	—	594	90.12	374
Do. (slimes)	—	685	81.98	340
Do. (slags)	F	—	27.19	109
Guelph (J. and M. Davidson)	3	32	5.89	24
Hope (Alexandra Synd. No. 2)	5	385	98.18	407
Do. (sands)	—	296	21.50	89
Inkerman (I. J. Minaar), August ...	(5)	360	86.84	360
Do. (sands)	—	320	23.00	95
Do. September	5	330	131.00	544
Do. (sands), September	—	300	27.00	112
Just in Time (C. Somerset)	2	244	49.48	205
Kanyemba (Kanyemba Synd.)	10	580	169.17	701
Do. (sands)	—	410	58.46	242
Kelvin (Westoe Synd.), sands	2	150	26.21	109
Do. (sands)	—	200	14.17	59
Lion (J. Baker)	2	120	33.13	137
Mali (J. Thornett)	3	435	52.24	217
Mountain Dew (A. & J. Milne)	10	600	133.41	553
Nada (T. H. Long), August	(2)	60	14.84	61
Do. September	2	20	4.06	17
Nora's Luck (A. Olsen)	2	90	19.58	81
Owl (A. Rolfe)	10	1,100	173.09	718
Do. (sands)	—	912	204.83	849
Owl Exten. (Cribb and Sear), Aug. ...	(10)	965	170.06	705
Do. (sands)	—	900	49.02	203
Do. September	10	1,025	161.81	671
Do. (sands)	—	900	83.16	345
Pickstone 1W (Pickstone G.M. Co.,				
Ltd.), August	(10) (1T)	985	292.48	1,212
Do. (sands)	—	985	—	—
Do. September	10 1T	1,109	335.86	1,392
Do. (sands)	—	1,109	—	—
Pomposo (J. Knott), Aug. & Sept.—				
(sands)	—	750	62.34	258
Princess Royal (Mrs. S. Smith), Aug.	2	47	19.70	82
Revie (Ambrose & Aitken)	5	700	82.59	342
Do. (sands)	—	530	36.65	152
Rouge (Dreadnought Synd.), slimes	—	400	30.70	127
St. George 1 (A. & J. Milne)	(10)	400	86.35	358
St. Louis (A. J. van Breda)—				
August and September (sands) ...	—	530	38.41	159
Tel el-Kebir (J. G. Volk), sands ...	—	450	38.44	159
Tiger (Clark & Bladsburn), August	5	265	31.14	129
Tsessesbe E. Ext. (Ullyett, Cribb &				
Sear)	5	858	396.69	1,645
Do. (sands)	—	618	82.06	340
Washington (I. J. Minaar), August	—	180	43.00	178
Do. (sands)	—	160	11.67	48
Do. September	—	170	65.57	271
Do. (sands)	—	150	13.03	54

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What Cheer (H. Moser), August ...	(10)	680	100.31	416.
Do. (sands)	—	475	31.47	130
Do. September	10	470	148.40	615
Do. (sands)	—	375	26.90	112
Yellowstone (S. Hemlock) adjustment, December, 1917	F	—	—	3

Hartley District Total 9,241.65 38,727

LOMAGUNDI DISTRICT.

Alluvial (five producers)	—	—	83.93	347
Angwa (F. L. Standen)	5	793	55.28	229
Anglian (Schapke and Quarrie)	5	157	33.97	141
Crescent (Crescent Syndicate)	F	114	16.02	64
Do. adjustments, Sept.-Dec., '17	F	—	—	15
Eldorado Banket G.M. Co., Ltd., 20 2C	4P	5,430	1,911.20	8,107
Do. (sands)	—	3,200	—	—
Do. (slimes)	—	2,300	990.92	4,203
Maggiemac (J. McMurdon)	5	520	94.46	392
Do. (sands)	—	420	65.04	270
Northern Star, No. 2 (Paget and Con- die), adjustments, Sept.-Dec., 1917	F	—	—	8
Silverside (Silverside Syndicate)— Adjustment, Sept.-Nov., 1917 ...	F	—	0.09	3

Lomagundi District Total 3,250.91 13,779

MAZOE DISTRICT.

Iron 1 (J. M. Laing)	5	916	94.03	390
Do. (sands)	—	450	57.31	238
Jumbo 1NW (N. Irvine)	5	532	44.94	186
Do. (sands)	—	280	84.63	351
Do. clean up	—	—	9.89	41
Kimberley (Mash.) G.M. Co., Ltd., (slags), Dec., 1917	F	—	—	114
Maori Chief (D. McLean)	5	180	68.22	283
Mildred (Rose and Cooke)	2	150	17.98	75
Peveril of Peak (G. G. N. Southey)	2	150	26.53	110
Promoter 1 (F. C. Croxford)	C	2,984	100.62	417
Do. (sands)	—	2,100	150.17	622
Rothschild (Cunningham & Allison)	10	510	296.80	1,230
Do. (sands)	—	—	50.83	211
Do. (slags)	F	—	34.96	140

Mazoe District Total 1,036.91 4,408

SALISBURY DISTRICT.

Excelsior (Broodryk & Mangan) ...	2	40	15.37	64
Found A (Guy's Synd.), slags— November, 1917	F	—	—	1
Hague (Hague Synd.)	2	80	5.51	23
Indicator (W. A. Hoole)	5	85	14.74	61
Invague (P. Zaffere)	2	150	19.19	80
Joking and Euchred (Harrison and Drabble)	8	1,234	380.77	1,578
Joyce (Ellsmoor and Wyper)	5	569	79.02	328
Left Bower (B. G. Byerley)	5	380	18.76	766
Mont D'Or (C. N. Buller), August	5	154	61.27	254
New Full Back (W. B. Maris)	2	40	12.48	52
Planet (Planet Mine Tribute)	5 1T	464	60.65	251
Do. slimes	—	1,423	177.50	736
Radnor 1 (— Tyland), Aug., sands	—	440	33.87	140
Shamya Mines, Ltd.	56N 10T	45,428	3,145.40	13,336
Do. (sands)	—	21,889	4,746.87	20,127
Do. (slimes)	—	24,423	—	—
Do. (slags)	F	—	137.31	549
Do. (slags), November, 1917 ...	F	—	—	17
Southern Cross (Arab Synd.)	2	67	25.36	105
Do. (sands)	—	180	18.86	78
Trio (Trio Synd.)	5	424	199.13	825
Do. (sands)	—	339	31.33	130

Salisbury District Total 9,349.39 39,501

UMTALI DISTRICT.

Bessie S.E. (J. Buchanan)	5	1,130	50.53	209
Do. (sands)	—	1,130	156.03	646
Elgin, adjustment Aug., Oct. and Dec., 1917	—	—	—	70
Golden Gate (Meikle & Davis)— adjustments, Jan. and May, 1917	—	—	—	29
Iona West (Meikle & Davis)— adjustments, Jan. and Oct., 1917	—	—	—	4
Kent Mines, Ltd., adjustments, May, 1917—Jan., 1918	—	—	—	302
Liverpool (R. G. Snodgrass)	5	820	124.46	516
Do. sands	—	460	155.66	645

Liverpool A (Meikle & Davis),— adjustment, Oct., 1917	—	—	—	5
Mecca (Meikle & Davis),— adjustments, June and July, 1917	—	—	—	13
Pilgrim 2 E (F. R. Myburg), plate	—	—	1.56	6
Juagga (J. D. Maclean), August ...	(5)	603	91.78	380
Do. September	5	480	75.46	313
Rezende DB1 (R. P. Synd.)	5	460	52.67	218
Do. DB. (Meikle and Davis), adjustments, June, Aug., Oct., 1917, Jan., 1918	—	—	—	127
Rezende Mines, Ltd.	40	5,200	1,491.55	6,329
Do. (sands)	—	3,670	457.06	1,939
Do. (slimes)	—	1,375	337.90	1,434
Do. (concentrates)	—	121	506.01	2,147
Sheila (Meikle and Davis),— adjustments, July, 1917	—	—	—	4
Umtali B (Meikle and Davis),— adjustments, May, 1917	—	—	—	2
Western (J. Meikle), adjustments, January, 1917	—	—	—	1

Umtali District Total 3,500.67 15,337

VICTORIA DISTRICT.

Cambrian (J. and D. Laing)	10	700	96.54	400
Do. (sands)	—	500	93.62	388
Do. (slags)	F	—	7.89	32
Cotopaxi (T. Morris & W. Hamilton) Nov., 1917 (under declared) ...	—	—	—	1
Echo (A. Aronson)	5	200	22.86	95
Empress S.A. Pros. & Con. Synd.)	8	1,200	92.74	384
Do. (sands)	—	800	49.34	205
Gipsy 1E (S. A. Taylor), Aug. sands	—	220	6.88	28

Victoria District Total 369.87 1,533

P., Grinding Pan; B.M., Ball Mill; T., Tube Mill; H., Huntington Mill; G.R., Gates' Rolls; B., Ball Mill; Pn., Pneumatic Stamp; N., Nissen Stamp; C., Chilian Mill; R.P., Roasting Plant; F., Treated at Falcon Mine; W.M., Waterfall Mill; L.M., Lane Mill.

SUMMARY OF PRODUCTION.

Gold—

August, 1918	£257,095
September, 1918	247,885
Decrease	£9,210

September, 1917	£291,367
September, 1918	247,885
Decrease	£43,482

Silver—

*September, 1918	£4,869
August, 1918	2,351
Increase	£2,518

BASE MINERAL PRODUCTION.

*September, 1918	£122,566
August, 1918	71,264
Increase	£51,302

TOTAL MINERAL PRODUCTION.

September, 1918	£375,320
August, 1918	330,710
Increase	£44,610

September, 1917	£394,239
September, 1918	375,320
Decrease	£18,919

* Including adjustment on realisation.

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Mining Journal

AND ENGINEERING RECORD.

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South African Mines, Commerce and Industries.

ESTABLISHED 1891.

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Notes and News.

Elsewhere in this issue will be found a full report of the proceedings at the annual meeting of the **The "Johnnies" Johannesburg Consolidated Investment Co., Ltd.** The speech from the Chair, by Mr. John Munro, was, perhaps, the shortest ever made at an annual meeting of the company—but it lacked nothing in interest or informativeness. As Mr. Dale Lace pointed out in moving a vote of thanks to the Chairman, the future of the company in the new era of peace is of the very brightest.

* * * *

We have received several letters in regard to the vexed questions of Far South-East Rand geology, which we have been reluctantly compelled to hold over for the present. Correspondents will help us and the cause of truth very much if they will endeavour not to mix personalities with their geology.

* * * *

A full report of the speech made by Mr. Dale Lace at the annual meeting of the **Lace Proprietary** will be found in this issue. Never was Mr. Dale Lace's invincible optimism better justified than to-day, and the personal tribute paid to him by Mr. Jeppe will be echoed by all who know how he has not spared himself in his efforts to advance the Far East Rand.

* * * *

The manager of the East Rand Proprietary Mines has written to the Boksburg Council as follows: "I beg to inform you that it is proposed to discontinue pumping water from the Boksburg lake, owing to the curtailment of our mining operations and to the fact that we are obtaining from the mine a sufficient supply of water suitable for the purposes for which the Boksburg lake water has been used. I exceedingly regret that the revenue from this source will be lost to the municipality, as I fully recognise the very good use to which it was put, but I trust the Council will appreciate that the present precarious position of the company renders it imperative that every economy must be exercised."

* * * *

The first ordinary general meeting of shareholders of the **New State Areas, Ltd.**, was held in the Board Room, Consolidated Buildings, on Wednesday, Mr. J. Munro presiding. The meeting being purely a formal one under the provisions of the Companies Act, the chairman moved the adoption of the directors' report and the balance sheet, the motion being agreed to without discussion. The retiring auditors, Messrs. Alex. Aiken & Carter and Messrs. E. Danckwerts & Co., were re-elected. This concluded the business.

* * * *

The **Hume Pipe Company** have secured orders during the past few weeks for large quantities of piping. The Ladysmith Municipality have ordered 5,400 feet of piping for 250 lbs. working pressure. Gold mining companies, amongst which are Modder B., Wit. Deep, Springs Mines and Village Main Reef, have ordered piping for pressures from 150 lbs. down to 50 lbs. Other orders have come in from country districts for culverts, drains, etc. A further consignment of new plant has arrived, which will enable the works at Germiston to be doubled in size and output. Some wonderfully good test results have been obtained with pipes. Two lengths of 4 inch pipes jointed together with Hume collar joint are tested daily to 360 lbs. per square inch without showing the slightest signs of leakage or sweating. It is less than two months since these particular pipes were made, and, as is well known, concrete pipes improve with age.

Mr. Dale Lacey has written to the *Star* an eloquent and closely-reasoned appeal in favour of a "Tombola." Space unfortunately does not permit of our dealing with the letter this week, but all interested in the subject would be well-advised to peruse the case made out by Mr. Dale Lacey.

A State Lottery.

The following are the particulars of the T.G.M.E. Company's output for the month of October, 1918:—Central Mines: Tons crushed, 10,300, yielding 4,651 fine ozs.; Elandsdrift Mine: Tons crushed, 1,230, yielding 800 fine ozs.; Vaalhoek Mine: Tons crushed, 1,600, yielding 545 fine ozs. Estimated value of month's output, £24,950; estimated profit for the month, £6,276. Publication delayed owing to illness of staff from influenza. Milling has been suspended since 25th October, as few natives are at work.

The Zaaipiaats directors' report for the quarter ended 31st October, 1918, has the following, *inter alia*:—The mill ran on 64 days during the quarter, crushing 4,748 short tons, the duty per stamp being 11.15 tons per 24 hours. The output for the quarter amounted to 138 long tons of concentrates, assaying 69.8 per cent. metallic tin. The results of working show an estimated profit for the quarter of £17,622 2s. 7d., excluding directors' fees and Government taxes. 82 long tons of refined tin, assaying 99.5 per cent. metallic tin, were produced by the smelter. Owing to the influenza epidemic operations were brought to a standstill for two weeks at the close of the quarter, and the results have been adversely affected thereby. The expenditure on capital account for machinery and plant amounted to £131 19s. The main face section in No. 13 section has remained steady in extent and values. No fresh developments took place in other sections. During the quarter 4,868 tons of ore were mined and disposed of as follows: Waste sorted, 120 short tons; sent to mill, 4,748 short tons; total, 4,868 short tons. No improvement in the labour supply was experienced and the epidemic caused a further serious depletion in the number of natives in service.

For the twelve months to the end of September, 1917, the gross revenue of the Beira-Salisbury section of the Mashonaland Railway Company decreased £7,249, while the working expenditure rose £21,009, with the result that the net earnings decreased £28,258. The unsatisfactory result is attributed to the shortage of shipping and the restriction of imports and exports on the one hand, and to the abnormal rains in the early part of this year. For the nine months to June last the gross revenue fell off to the extent of £47,436 and the net earnings £69,152. Owing to the increased activities at the copper mines in the Belgian Congo, the gross receipts of the Kalomo to Broken Hill section rose £36,737, and the net gain was £23,658, followed by a net improvement in the subsequent nine months. The report states that during the past two years questions relating to the wages and conditions of work of the railway staff in Rhodesia have engaged much attention. In November, 1917, it was arranged to refer to arbitration certain matters in dispute between the management and the employees. The Arbitration Court, of which Mr. Justice Ward, of the Transvaal High Court, was president, issued an award in February, 1918, which it is hoped will allay the dissatisfaction that had arisen among certain grades of employees, and preserve the good relations that have hitherto existed between the company and its staff in South Africa.

The report of the Victoria Falls Power Co., Ltd., is now available for the year 1917, the dividends in respect of which have been already announced, namely, 10 per cent. in all on the six per cent. participating preference shares and 5 per cent. on the ordinary. The net earnings were £836,301, against £800,926 in 1916 and £729,662 in

1915. After providing for interest and premiums on debentures for the year and for depreciation and income tax, etc., there remains £262,766 as net profit, against £254,607; but as only £72,425 was brought in, against £161,568 in the preceding year, the available total is £335,191, against £416,175. Consequently the appropriation to reserve, which was £150,000 for 1916, has been reduced to £50,000, and after paying the dividends already mentioned £97,691 is carried forward, against £72,425 brought in. The report contains no reference to the question of shareholders being entitled to a refund of part of the income tax deducted from the dividends on the ground that the company is incorporated in Southern Rhodesia. During the year a further £147,900 of the five per cent. first debentures and £13,800 of the 5½ per cent. second debentures have been drawn or purchased for redemption. The preference shares, which rank *pro rata* with the ordinary in surplus profits until 10 per cent. is paid on them, are at present quoted about 24s., and at this figure they yield a purchaser about 8 5-16 per cent., while the ordinary, which last year received 5 per cent., are quoted about par. The latter have possibilities, and the former constitute an excellent speculative investment. The issued capital is £2,000,000 in preference and £1,000,000 in ordinary shares of £1, while the first debentures now amount to £2,700,000 and the second debentures to £1,376,640. The reserve stands at £200,000, and a substantial increase has taken place in the investments, which include £466,355 War Loan five per cent. and £308,219 five per cent. National War Bonds.

In response to a requisition signed by some 40 members, a special meeting of members of the Witwatersrand Commercial Exchange was held on Tuesday afternoon. Mr. A. Y. Niven, chairman of the Exchange, presided, and in opening the meeting, said, *inter alia*:—"Gentlemen, as you are aware, this meeting has been called in response to a requisition signed by 40 members of the Exchange in order to discuss the question of allowing enemy subjects to trade on the Commercial Exchange in future, and to devise means to prevent it. I need hardly say your committee is in full sympathy with the object of the requisition, and I feel sure the members of the Exchange generally will do all in their power to strengthen their hands in any action they may consider it necessary to take in this direction." After an eloquent speech by the chairman, Mr. D. W. Hamilton moved the following resolution: "That this meeting of members recommends the committee of the Witwatersrand Commercial Exchange to immediately frame and pass a bye-law, excluding from membership or representation on the Exchange any person or firm of enemy nationality, for a period of five years from the declaration of peace." Mr. W. S. Thomas, in seconding, made a speech in which he said the resolution expressed the sentiments of traders of all nationalities, except enemy subjects perhaps. After some remarks by Mr. C. F. Wienand and Mr. H. S. Potter, Mr. J. N. Sellar moved as an amendment that the proposal to limit the application of the bye-law to a period of five years be deleted, and on being put to the meeting the resolution with this amendment was carried unanimously. Mr. G. R. Lambie moved: "That it be a recommendation from this meeting to the committee of the Witwatersrand Commercial Exchange that representations be made to the Government, the Chamber of Mines, and the Municipalities of the Rand, urging them for a period of at least five years from the declaration of peace, not to purchase from enemy firms or have any dealings in goods or products of enemy origin." Mr. MacGregor seconded the resolution, which was carried unanimously. Mr. V. Kent suggested that copies of these resolutions be posted to all the members of the Government, Chambers of Commerce, Chamber of Mines, and the Municipalities of the Union.

TOPICS OF THE WEEK.

THE PROBLEMS OF THE INDUSTRY.

NOTABLE speeches were made at Springs on Thursday by the Minister of Mines and the President of the Chamber of Mines. The occasion was a lunch given in honour of the Minister by the Mayor of Springs, at which a representative gathering of Rand mining men attended. In the course of a long and eloquent speech the Minister referred to the building that was being erected for the training of miners. There were three such schools in existence, and the Government believed that they would be of lasting benefit to the students as well as to the industry, which would become safer and more interesting. He said he also came to see what development was being done on the new areas. It had been foreseen that some mines would have to close down. To avert a disaster, it was necessary to start new mining undertakings to absorb men who would be thrown out of employment. He would not at that stage express any opinion about the Bantjes, but he would say that the Government was justified in looking to the East Rand to provide new undertakings. The Minister declared that no one who visited the four new Far East mining areas that were now being developed could doubt their tremendous possibilities, the great amount of work and prosperity that that development would bring into the Springs district as well as to the whole Union. He thought it would be acknowledged that the Government had been wise in bringing up this set-off to the closing down of some of the mines. To facilitate that an amendment of the Gold Law was passed. In his darker moments he doubted whether this law would give everyone everything that was expected. At any rate, it had made the development of the East Rand possible under conditions more advantageous to the people, whilst the risking of a large amount of capital in the development of these deep levels would ultimately be to the lasting benefit of the whole of the Union. At the same time, he associated himself with the sentiments of the Mayor of Springs as to the desirability of looking in other directions for the development of industries. He was glad to think that some people who in the past had been inclined to throw all their eggs into a golden basket were now finding out that there might be more gold in other baskets. The Government was encouraging the application of science to the development of industries, and he also thought they should create a condition with regard to unfair dumping and competition from outside, so that the industries of the country might hold their heads above water. The Government had instructed the Advisory Board for Industries and Science to prepare suggestions with regard to a Customs tariff from the industrial point of view. As far as that district was concerned, the amount of development done and the money that had been spent in the district were so vast that Springs was bound to benefit, and in any difficulties he, as Minister of Mines, promised to give all the assistance he could. Sir Evelyn Wallers, who spoke after Mr. Malan, said the mining industry was very largely associated in his mind with a stream of problems of great variety and persistence as well as of considerable perplexity. They had had, and still had, the problems arising from the war. They would have, as Mr. Malan had told them, the problems arising from the great and glorious peace that would soon be consummated, and with all these they had those problems which he (Sir Evelyn Wallers) would describe as general or seasonal. Unfortunately there was one problem that was now particularly acute, and that was the effect on the native labour supply to the industry of the appalling influenza epidemic. Fortunately the loss of lives amongst the natives on the mines had been extremely light, which was eloquent testimony to the medical officers of the mines, the compound managers, and the hospital staffs. But its effect on the stoppage of recruits was serious. Most of the mines in the last few months had had a bad time, and he feared that the next few months would similarly be bad. Still he thought they reasonably could hope that this was one of their temporary problems, and that they would soon turn

the corner in that respect. The President went on to discuss the problem of reconciling the interests of employers and employed, and pointed to the fate of Russia as an instance of "how not to do it" in social and industrial affairs. He uttered an eloquent plea for moderation and for the elimination of the extremist in the councils of both employers and employed. The whole speech must be read with the other public utterances on the subject made of late by the President of the Chamber, and we purpose returning to it in an early issue. Meanwhile we may congratulate the Mayor and Municipal Council of Springs for drawing forth two such valuable, first-hand contributions on current problems from authorities best qualified to offer them.

Colonel H. T. Fenwick, presiding recently at the meeting of Willoughby's Consolidated Co., Ltd., said their cattle lands would shortly be fully stocked, and substantial returns should begin to accrue. As to mining, in these times it was impossible to arrange new tributing agreements, but in their asbestos they had a valuable business. The criticisms which had reached him largely centred on the directors' fees. The managing director's agreement had now terminated, and it was not intended to renew it; that would save £3,000. The other criticism was that they said nothing in the accounts with respect to the share interests. It was a fact that the Eileen Alannah shares were standing in their books a great deal higher than the market price, but those were the only shares that were doing that. Two other shareholdings stood at a lower figure than they would realise at the present moment. For the current year they might expect a saving of at least £7,000 in expenditure; their "bread-and-butter" revenue would probably be a little bit more; their cattle would probably yield a nice little bit more, and from their asbestos he had great hopes.

* * * *

The report of the S.A. Diamond Corporation for the year to June 30 last states that the directors have made arrangements with the two permanent directors, who are holders of the founders' shares, that they waive their interest of 25 per cent. in the profits of the company altogether, and the two shares will in future rank for dividend *pari passu* with the ordinary shares. In consideration of this waiving of their rights the board have given the holders of the founders' shares the option for a period of five years after the declaration of peace on 50,000 shares at 25s. and 50,000 shares at 30s. The profits made during the year, which amount to £35,114, have not alone wiped out the deficit balance of the profit and loss account of £21,344, but have enabled the directors to declare a dividend of 7½ per cent., while the cash assets leave the corporation in a very sound position. The shares in other companies taken at to-day's market values show a considerable appreciation over cost price. The diamond industry, in which the fortunes of the corporation are so largely bound up, has steadily advanced during the past twelve months, and it is doubtful whether there has ever been a greater demand for diamonds. Prices of the commodity have certainly never been so high, and are likely to go much higher. The shares in the producing companies have somewhat reflected the prosperity of the trade, but notwithstanding the big profits that are now being earned, the prices of the principal shares are well below pre-war value, which is quite inexplicable. The directors have acquired considerable new interests in the Far Eastern Rand district on very favourable terms, which will ultimately prove of great value to the corporation. The board also took the opportunity during the past year to realise certain holdings at a good profit. In view of the recent rise and activity in the shares of the New Vaal River Diamond and Exploration Co., it is gratifying to the board that the corporation's large holding in this company has so considerably appreciated. From reports to hand the New Vaal River is obtaining record prices for its diamonds.

THE POSITION OF NEW STATE AREAS.

Finances and Initial Operations Explained.

THE report of the directors of the New State Areas, Ltd., submitted at the first ordinary general meeting on 27th November, shows that the registered capital of the company is £1,500,000, in shares of £1 each; of these, 316,000 shares are fully paid, and on the balance of 1,184,000 shares 2s. per share has been paid. The property consists of 1,175,6736 claims on the farm De Springs No. 15, and 874,3224 claims on the farm Geduld No. 24, both in the mining district of Boksburg, making a total of 2,049,996 claims, held under 2,055 claim licences, in terms of a mineral lease from the Government under the Precious and Base Metals Act of 1908. The balance sheet discloses the capital expenditure up to 30th September, 1918, as follows: Surface equipment, £41,336 4s. 9d.; buildings, £10,189 17s. 9d.; permanent works (shafts), £5,820 16s. 3d.; water supply, roadmaking, etc., £3,804 1s. 10d.; live stock and vehicles, £878 4s.; sundry expenditure not allocated, £4,009 14s.; total, £96,038 18s. 7d. Investments and Interests, £171 15s. 6d., consist of 13 shares of £1 each, fully paid, in the Native Recruiting Corporation, Ltd., together with a deposit of £150, on the basis of 5s. per native on a complement of 600 natives, and also one £10 share in the Rand Mutual Assurance Company, £6 called up, at a cost of £8 15s. 6d. Administration and general expenses from the inception of the company to 30th September, 1918, were £10,809 18s. 3d. Interest earned amounted to £6,659 17s. 10d., and rents and brokerage to £634 8s. 9d.

The Consulting Engineer (Mr. W. L. White) writes:—Preliminary operations were commenced in March, 1918, and since then considerable progress has been made with the erection of buildings and plant. Although it was impossible to import plant from Overseas, every effort was made to instal permanent equipment wherever possible. Wooden headgears have been designed of a sufficient height and structure as will render them permanent; and the hoisting engines, which have been purchased locally, are also suitable for the permanent installation. Two shafts—known as the north shaft and south shaft—are being sunk. Each shaft is 11 feet 3 inches wide by 26 feet 3 inches within, and consists of four long compartments 6 feet within and 9 inch dividers. We have been fortunate in securing

two direct-acting hoists for the south shaft—one from the Simmer Deep and one from the Roodepoort United—which are sufficiently powerful not only for sinking but to act as permanent hoists when milling operations commence. The erection of the headgear is nearing completion. The foundations for the 26 inch by 48 inch hoist have been laid, and the erection of the hoist is in hand. Four double-drum Babcock & Wilcox boilers have been purchased, and are now being installed. The engine house and boiler house, which are brick buildings, are in course of erection. The sinking skips and tips, and also the four 10-foot diameter headgear sheaves, are being made locally. The work is not so far advanced at the north shaft, where the nature of the ground has necessitated much deeper foundations than at the south shaft. The concrete shaft collar has been completed, as also the foundations for the headgear and the engine beds. Framing the timber for the headgear is well advanced, and the erection of the headgear will be commenced immediately. Two direct-acting hoists have also been secured for this shaft—one from the Randfontein Deep and one from the Vogel Deep. The boiler plant is similar to that at the south shaft. The foundations have been completed, and the erection of the boilers has been put in hand. The engine house at this shaft will be a wood and iron building, which has been purchased from the Randfontein Deep. Skips, tips and headgear sheaves are being made locally. The depths of the shafts at the 31st October were as follows: North shaft, 105 feet; south shaft, 103 feet. The following buildings have been completed or are in course of completion: 40 single quarters, in 8 blocks of 5 rooms each; 19 4-roomed and 10 3-roomed cottages; manager's house: two native compounds—one at the south shaft, with accommodation for 300 natives, and one at the north shaft, with accommodation for 200 natives. Both compounds are of the small-room type (12 natives per room), and both are arranged for extensions as required. Workshops; store building and store yard; temporary offices; explosives magazine; permanent boarding-house. Arrangements have been made with the Victoria Falls & Transvaal Power Company for a temporary supply of electric power; the transformer house for same is in course of erection, and we have been fortunate in securing the necessary distribution cables for lighting purposes and small power requirements at each shaft.

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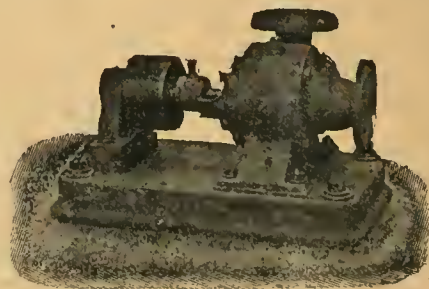
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THE YEAR WITH THE GOLD FIELDS RHODESIAN DEVELOPMENT COMPANY.

Position of Subsidiaries Reviewed.

The directors of the Gold Fields Rhodesian Development Company, Ltd., in their report on the affairs of the company for the year ended May 31, 1918, state, *inter alia*:—The issued capital of the company stands at £1,257,110, in 2,514,220 shares of 10s. each, of which 1,392 shares still remain due to holders of fractional certificates. The balance of 971,560 shares is held in reserve. The realised net profit on the year's operations amounts to £181,536 15s. 10d., adding to which the balance from appropriation account of the last financial year, viz., £33,774 3s. 4d., and deducting therefrom the interim dividend of 6d. per share paid on the 6th May last, amounting to £62,855 10s., there remains an available balance to credit of profit and loss account of £152,455 9s. 2d. In addition to the foregoing realised profit, the investments of the company show, on current market prices, a further unrealised profit. The directors recommend that a cash dividend of 6d. per share, less income tax, making 1s. per share, equal to 10 per cent. for the year, be paid on the 2,514,220 shares of the company, amounting to £62,855 10s., leaving £89,599 19s. 2d. to be carried forward to the credit of the current year's profit and loss account. Although the conditions due to the war during the past year have generally tended towards a reduction of mining profits, the company's income from this source, whilst less from the Shamva Mines, Ltd., has increased, owing to the accession of the Falcon Mines, Ltd., to the ranks of the dividend-paying companies; other profits have been derived from realisations of certain share holdings. The many factors adverse to successful mining during the past year have recently been added to by a shortage of coal from causes apparently beyond the control both of the Wankie Colliery and the Rhodesian Railways. Every effort in this connection continues to be made to overcome the difficulty of securing a full complement of native labour and an adequate supply of railway material and rolling stock. The supply of the latter has been affected by the restric-

tions necessarily placed upon all manufacturing firms and on sea-borne transport during the continuance of the war, as a consequence of which, also, no fresh enterprises dependent upon the provision of machinery and plant have been practicable. An offer by the company to the Planet-Arcturus Gold Mining Company to lease its mine for a period of years having been accepted on terms which it is hoped will enable that company to liquidate its indebtedness to the Gold Fields Rhodesian Development Company, and thereafter to become possessed of its property fully equipped and unencumbered, arrangements have been made to resume development work at an early date and to acquire certain available machinery and plant, which it is anticipated will be ready for delivery and erection within the required time. As will be seen from the General Manager's report, an option of purchase has been given over the Asp Gold Mining Company's property. A schedule of the company's principal investments is with the report. The General Manager's and the Consulting Engineer's reports, together with schedules of mining claims and land holdings, and also tabular statistics thereto annexed, give detailed information in connection with the company's various interests as at the 31st May last. Mr. G. Mitchell's agreement with the company having terminated, the directors have appointed Mr. J. G. McDonald as general manager of the company in Rhodesia. Mr. Mitchell will maintain his connection with the company, and will continue to act as local director of the subsidiary companies. In accordance with the terms of the company's circular of the 2nd December, 1916, Lord Harris and Messrs. H. G. Latilla and H. C. Porter are resigning, but are eligible and offer themselves for nomination as directors. The Consolidated Gold Fields of South Africa, Ltd., will give effect to the nominations as expressed by the votes of the shareholders in general meeting. The auditors, Messrs. Chatteris, Nichols & Co., retire, and offer themselves for re-election.

Cape Diamond Output for October.

The statement of output of diamonds from the public diggings in the Cape Province during the month of October, 1918, supplied by Col. T. J. Wynne, Chief of the Detective Department, Kimberley, is as follows:—

BARKLY WEST.

Area.	No. of Diggers.	Carats.	Value.
Delpont's Hope	24	103 $\frac{3}{4}$	£1,009 0 0
Elandsdrift	2	33 $\frac{1}{2}$	240 10 0
Forlorn Hope	2	1 $\frac{3}{4}$	10 15 0
Gong Gong	20	83 $\frac{1}{2}$	680 0 0
Good Hope	37	82 $\frac{1}{2}$	719 0 0
Harrisdale	4	19 $\frac{1}{2}$	97 0 0
Hebron	62	165 $\frac{1}{4}$	1,318 17 6
Holpan	14	69	515 10 0
Jonas Kop	1	2 $\frac{1}{4}$	26 0 0
Keiskama	1	4 $\frac{3}{4}$	35 0 0
Klipdam	51	160 $\frac{3}{4}$	1,243 2 6
Klipdrift	25	44	252 12 6
Last Hope	12	31 $\frac{3}{4}$	286 7 6
Longlands	23	60 $\frac{3}{4}$	372 5 0
Niekerk's Rush	7	40 $\frac{1}{2}$	447 15 0
Rickett's Prospect	3	8 $\frac{3}{4}$	41 5 0
Rosalind	1	1 $\frac{3}{4}$	25 0 0
Scholtz's Prospect	26	139 $\frac{1}{2}$	1,252 5 0
Snyder's Rush	8	54	716 10 0
Van Zoelan's Laag.	6	17	139 0 0
Waldeck's Plant	30	147 $\frac{1}{4}$	958 2 6
Williamstown	1	$\frac{1}{2}$	1 0 0
Winter's Rush	19	59 $\frac{1}{2}$	490 17 6
	379	1,331 $\frac{1}{2}$	£10,877 15 0

Note.—The number of claimholders in the mining district of Barkly West during the month of October, 1918, was 1,222.

HERBERT.

Platdrift	2	12 $\frac{3}{4}$	£102 0 0
Schmidt's Drift	5	74 $\frac{1}{2}$	868 10 0
	7	87 $\frac{1}{4}$	£970 10 0

KIMBERLEY.

Robinson's Kopje	2	43 $\frac{3}{4}$	£212 10 0
Wedberg	9	20 $\frac{1}{2}$	136 5 0
	18	64 $\frac{1}{2}$	£348 15 0

TAUNGS.

Killarney	14	103 $\frac{3}{4}$	£1,569 10 0
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PRIVATE ESTATES.

River View Diamond Syndicate	50 $\frac{3}{4}$	422 0 0
New Vaal River D. and E. Synd.	638 $\frac{3}{4}$	6,659 2 6
Pniel Estate	13	68 0 0

COAL MINING.

I offer for Prospecting and Mining my farms Roseberry-plain and Saltberryplain, 6,330 morgen, near Wolvelhoek and Coalbrook Stations, about 64 miles from Johannesburg, on Bloemfontein Main Line. Coal Seam about 24 feet thick 2 oreholes. PEETER S, P.O., Coalbrook Station.

THE MINING INDUSTRY OFFICIALLY REVIEWED.—IX.

Some Extracts from Annual Reports of Inspectors of Mines.

Alluvial Diggings.—The output from the diggings on the Vaal River has fallen from 1,503 carats last year to 967 carats this. By way of compensation the average value per carat has risen from 132s. 7d. to 135s. 9d.

From the farms on which alluvial is worked on the Free State side of the Orange River, there has been an output of 699.3 carats, valued at £4,126 or £5 18s. per carat. The last figure compares rather badly with the previous year's, when the average price was £6 16s. 9d. These results, though representing an increase on last year's figures, are very disappointing in view of the hopes entertained at one time for this field. However, the popularity of a district is perhaps less a matter of intrinsic merit than of the idiosyncrasy of the digger. In any case, the *dictum* of the latter is that the deposits of the Orange River are inferior to those of the Vaal, and this more or less seals the fate of this district for the time. It is certain, however, that now attention has been directed to these gravels and some rich patches discovered, interest in them will never entirely cease, but rise and wane according to the latest results, as on all other alluvial fields.

Coal.—For seven years running the output of Free State coal has shown steady and continuous improvement, but prospects have never been brighter than as things now stand.

The recent agreement by its owners to continue the Transvaal Coal Owners' Association, Ltd., for another five years provides assurance of a certain portion of the output being provided for through this channel, whilst the increased operations of the Vereeniging station of the Victoria Falls Power Company afford promising possibilities in another direction.

It has been from Vereeniging that a first start has been made in South Africa with producing power at the pit mouth to carry to the consumer at a distance. If this practice has proved a success here, as it would appear to have done, at this comparatively early stage, then the outlook is certainly very hopeful. Indeed, in view of the progress that has been made in the economic use of these low-grade coals, of the enormous bodies available within suitable distance of the Vaal River and of the cheapness of which these may be mined, added to the nearness to the Rand of this field as compared with any other, it is scarcely possible to go anywhere else, if further power, so produced, is required for the Witwatersrand. From a more general standpoint and taking a longer view, the advantage suggests itself of using these low-grade coals in this manner and thus conserving the higher grade coals of Natal and the Transvaal for bunkering and special purposes, whilst at the same time economising labour generally and freeing the railways to an extent from coal transport for other purposes.

Cement.—Except for some slight delays caused by the recent heavy rains, the duplicated plant of White's South African Cement Works has worked with perfect smoothness during the year.

The company has all it can do to meet its orders, and both financially and otherwise represents a completely successful and well-ordered industry.

Lime.—Apart from the quarries in connection with the above works and the lime works at Honingspruit, we have only a small production to meet purely local requirements.

Gypsum.—No progress of any account has been made with this prospective industry.

The demand from the cement works is strictly limited and is easily met. At the same time, the competition of small producers has militated against an improvement in prices and has discouraged enterprise. Now, however, that our own resources are becoming realised and safety from outside competition more assured, it is reasonable to hope that some definite advance will soon be made.

Bricks, Tiles, etc.—The most satisfactory conditions have prevailed at the Vereeniging Brick and Tile Works during the year and much solid progress has been made.

The real value of such works to the general industry of the country has been abundantly evidenced by its ability to meet emergencies arising out of the failure in supplies from Europe. In this way, it has been able to come to the rescue of the explosives works by supplying all sorts of acid vessels and receivers, to that of the steel works with magnesite and silica bricks and other refractory material, to the help of our port towns with sanitary pipes in dearth of the European article hitherto depended on, and, not least, to that of the building industry with a light and cheap tile to replace the unsightly corrugated iron hitherto so exclusively used for roofing purposes.

It has to be added that the excellence of manufacture has left no room for complaint in any case, whilst in some instances proving fully equal, and even superior, to the European article.

Salt.—From all I have heard the demand throughout the year has continued rather in excess of the supply, but notwithstanding this there has been little, if any, advance in price. There seems, however, to have been more demand for finely ground varieties which afford a better profit.

It appears that last year we were only importing a little over one-fifth of what we were doing in 1913; but it is to be hoped that when this year's figures are available they will show still further reduction, as there should be no room for the imported article.

Important developments are ahead for this industry if, following upon the study and attention now being given to the subject, there emerges a practical scheme for the local manufacture of alkali. This should be settled one way or another before another year passes.

NATAL INSPECTORATE (J. E. VAUGHAN).

White Labour.—Skilled white labour has been very scarce throughout the year; this applies to surface men as well as underground.

Miners could always be obtained, but some of them were not such competent colliers as those employed in former years.

Many men joined the forces and went overseas; others went to the Transvaal; on the other hand, a good many men suffering from miners' phthisis left the Rand and came to the Natal mines; some of these men were not coal-miners and had to learn the work.

The Natal Mine Workers' Association made itself felt and, though no strikes occurred, obtained several concessions for its members.

The men asked for ten days' holiday per annum on full pay; this request was not granted, but the owners agreed to give ten days on half-pay to men who had worked steadily for twelve months.

In October the men asked for very substantial increases in pay, and, after a discussion between managers and men, it was decided that an all-round increase of 3s. per diem should be granted; underground men were to work 10 hours per diem with a 57-hour week, and surface men 9 hours with a 51½-hour week.

Better accommodation on the mines would be much appreciated by the men, and would probably lead to steady and reliable men being obtained; at some mines three-roomed cottages for married persons are provided, and if married people have children of opposite sexes it is difficult to arrange the necessary accommodation.

Many mines have recreation rooms, but they should be provided on every mine; the majority of the mines are some distance away from the nearest village, so that in the evenings there is little for the men to do.

There is one aspect of the white labour question on the mines which should not be lost sight of. Many natives and Indians are as competent as some of the white miners. The miners are constantly asking for more money, shorter hours, and various other concessions; the coal-owners are granting some of these demands, but this cannot

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go on indefinitely. It is possible that the coal-owners may think it better to increase the wages and number of white officials and to do away with white miners altogether.

At present white officials are indispensable, but the white miners would do well to realise that natives and Indians are waiting to take their places, and that unreasonable demands will accelerate the time when a white miner may find it hard to get a job.

Native Labour.—Native labour was not plentiful: in the concluding months of the year it became very scarce. The reason probably was that the abnormal and continued rains rendered the ground too wet to plough, and to get his ploughing done the native had to remain longer at his kraal than he otherwise would. The native and Indian labourers gave no trouble and worked as docilely as usual.

An outbreak of typhus occurred at the Hlobane Colliery, and the death-rate was very heavy. The disease was thought for several months to be pneumonia, and although the deaths from the disease at Hlobane were seventeen for the quarter ending June, it was not until the end of November that the disease was finally diagnosed as typhus.

Better hospital accommodation could be provided at some of the collieries, and it should be. Possibly this outbreak of typhus may cause an improvement in existing conditions.

Timbering.—The timbering at the collieries is excellent. St. George's Colliery continues to be the best timbered mine in Natal, and had no accidents from fall of roof during the year.

Ventilation.—The collieries are well ventilated, with the possible exception of the Avon Colliery.

This little mine relied on natural ventilation, but on some days the air got so bad that work had to be suspended: a furnace and chimney were tried, but the results were not so good as was hoped.

At the end of the year the owner of the Avon Colliery was endeavouring to obtain better ventilation by increasing the size of his intake airway.

Some of the new collieries, such as the New South African and the New Durban Navigation, will be very gassy, and for a start will have to work with smaller fans than was intended; as new fans cannot be obtained, these collieries have had to fall back on disused fans from worked-out mines. It is not anticipated that any difficulty will be experienced in dealing with the gas before large fans can be obtained from overseas.

Aids to Prospectors.—No application for assistance to prospectors was received. The reason for this is probably that there is so little prospecting going on in Natal.

Numerous persons sent in specimens for identification, but none of the specimens was of any value. Specimens of rhyolite were sent in with the statement that it was pitchblende, and samples of solidified mud as stream tin. It is, however, a good thing to encourage people to send in specimens, the trouble in identifying them is usually very little, and there is always the hope that one day a specimen of real value may arrive.

Government Battery.—This was disposed of to Mr. James Roy, of Johannesburg, for £300. The transfer was completed on the 29th June and a receipt for the plant obtained from Mr. Roy. Every one who has had anything to do with the battery is heartily glad to get rid of it.

It never fulfilled the purpose for which it was intended, i.e., to render assistance to prospectors. If the properties tested were poor, and most of them were, the prospectors grumbled at the results, and hinted that we stole the gold.

If an application was refused on the score that samples taken showed the proposition not to be worth a trial crushing by the battery, the applicants usually inferred that the Government Assayer was incompetent or that the Inspector of Mines had a grievance against the applicant.

The trial crushings cost the Government large sums. Prospectors, as a rule, would not go on developing their property, but let us crush what they had got out, and we were often hung up for stuff.

Coal.—The output of coal decreased considerably, being 2,890,296 tons, as compared with 3,066,261 tons in 1916.

The collieries could have produced more coal, but were handicapped by the scarcity of trucks.

Owing to submarine outrages, ships came into Durban intermittently; one week a large number would arrive, the next week none.

The trucks were hung up waiting for ships to take the coal, and when the ships did arrive there was sometimes not sufficient coal; in consequence, some ships went on to Delagoa to get coal. Shortage of engine-power was also given as a reason for scarcity of trucks.

At the end of the year the colliery owners and railway authorities devised a pooling scheme under which the coal was divided into two classes, A and B. Shins will now be supplied with A or B coal, and will not have to wait for the product of any particular colliery.

The price of Natal coal is steadily rising and is now nearly double what it was previous to the war.

The outlook for the coming year is dubious; now that the German East campaign is over, much shipping will be diverted, and as the British Government is allowing less and less commodities to be exported, I anticipate a further reduction in the output of coal.

Coal Resources of Natal.—While the Vryheid District has attracted much attention owing to the new collieries which are starting up there, it is as yet too early to say that the main future of the Natal coalfields lies in this area. In the Vryheid District the seams lie in the mountains, the summits of which are often covered by sheets of igneous rock. Because the outcrop of a coal seam is good in

several places on a mountain side, it cannot be held that it is going to be good right through the range of mountains, or even for a considerable distance in from the outcrop. Although vast quantities of coal exist in the Vryheid District, the knowledge of the nature of the coal throughout the district is still limited.

Considerable attention has been paid to the coal areas west of the Durban-Johannesburg railway line, in the Hattingspruit-Dannhauser District.

The seams here were thought to lie at a depth of 500 feet and more from the surface. At the close of the year coal was struck in a borehole five miles west of Dannhauser at a depth of 80 feet. If this seam is the "pointer," as is thought, the main seams should occur at 150 feet below surface.

If the main seams are of their usual thickness and of good quality in this area an immediate extension of active mining operations is most likely, as the mines would be nearer to Durban than the Vryheid mines, and it is probable that the Dannhauser coals will be of greater value for by-products than those in the Vryheid District.

Coal has also been struck at a depth of from 500 to 600 feet on the farms East and West Heselton, near Dannhauser, and is said to be of excellent quality.

Longwall Workings.—The longwall method of mining is now being tried at two collieries, but owing to delays in getting suitable coal-cutters and for other reasons, it is as yet too soon to say if the method will prove a success in Natal.

New Collieries.—Three new collieries started developing, namely, the Bernica Colliery, the Enyati Colliery, and the Northern Natal Navigation Colliery, near Paulpietersburg. The first-named colliery was producing a little coal at the end of the year and had erected a small coking plant.

The Northern Natal Navigation Colliery should be producing early this year, and the Enyati Colliery by June next. With present abnormal conditions there is a doubt if these collieries will be able to obtain all the plant and stores they require.

Coke.—The demand for coke increased very much during the year, and coke-making concerns were never short of orders. In consequence of this several collieries started to erect coke ovens at the end of the year, and the existing coke producers increased their plants.

Sales of coke during 1917 were as under:—

Vryheid Coke Company	6,723 tons
St. George's Colliery	3,701 "
Natal Navigation Colliery	4,937 "
Bernica Colliery	Nil

At the end of the year the undermentioned companies were erecting coke ovens:—

Tendega Colliery	26
Bernica Colliery	24
Burnside Colliery	54

Unfortunately all the ovens are of the modified beehive type and no by-products will be obtained.

By-Products.—The Natal Ammonium Company produced sulphate of ammonia throughout the year to the extent of 1,690 tons (2,240 lb.). This sulphate of ammonia fetched a price of £32 per ton and was of very high quality.

Some trouble was experienced with the producers, the design of which was not quite suitable for the coal, so that the producers clogged and did not put through as much coal as was anticipated. The shape of the producers was altered slightly and the difficulties were got over, the plant running well at the end of the year.

With the duplication of the plant the profits should be more than double and the future of the company therefore seems assured.

It is unfortunate that so much latent power has to escape in the waste gases. In other countries the power is the main thing, and the sulphate of ammonia a by-product.

It is a pity that some other industry cannot be started in the neighbourhood of these works. If the South African Railways wish to go in for electrification, it would appear that they might try the

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Other companies are seriously considering the erection of by-product works, and are only waiting for the conclusion of the war before starting such operations.

Metalliferous Mines.—Mining, apart from coal, is practically non-existent, though it is to be hoped, and I believe, that this is only a passing phase.

Copper.—Nothing was done with copper properties; and it is peculiar that no one attempts to work copper in Natal. With the high prices for this metal which now prevail some of the properties might be run at a profit.

Iron Oxide.—121½ tons of iron oxide for paint manufacture were obtained from the farm Hazeldene near Dundee.

Asbestos.—No work was done at Isitilo. The Buffalo Asbestos Company mined some asbestos near Helpmakaar. This was manufactured into tiles and sheathing for boilers and steam pipes. The amount of asbestos quarried was small, amounting to 28 tons, and the finished product was a mixture of asbestos, kaolin from the Waschbank Valley, and kieselguhr from the Transvaal.

Gypsum.—The Natal Gypsum Company produced some 1,265 tons of gypsum, but did very little during the latter half of the year. Notwithstanding this they paid a satisfactory dividend to the shareholders, and have now concluded a fresh contract with the Pretoria Cement Co. and intend mining gypsum actively in the coming year.

Cement.—No cement was manufactured, but as cement has been made at Umzimkulu on an experimental scale, one wonders why it is not attempted on a commercial scale, in view of the large profits such concerns as the Pretoria Cement Company are making.

Fires Underground.—The stoppings round old fire areas were carefully watched during the year. Constant inspection of these, by mine officials, is the only way to avoid further trouble from former fires.

Stone Dusting.—Stone dusting was continued during the year at the Durban Navigation Colliery, Natal Cambrian Colliery, Glencoe Colliery, St. George's and Burnside Colliery. In the latter half of the year, the mines were not so much in need of stone dusting as formerly: the incessant rains managed to get into the mines, through the broken workings, and several of the mines had a difficult job to cope with the water.

Rescue Stations.—Nothing has been done as regards the establishment of a rescue station, and nothing is likely to be done until the Government moves in the matter.

With the war on it is difficult to get persons interested in any such scheme as that of rescue work, but the absence of a rescue station in Natal is to be deplored, and we shall probably be very sorry one of these days that there is no station and no trained rescue team.

As there is no rescue station where men can be trained, nothing is being done in instructing men in the use of rescue apparatus.

Mine Dams.—Several new dams have been built, and some trouble has been caused by them, as the managers built the dams first and then sent in the plans and specifications, which did not, as a rule, meet with the approval of the Irrigation Department.

The managers, not having complied with Regulation 158 (20), have only themselves to thank for any extra trouble and expense the mines may have been put to, through the original dams having been faultily constructed.

Native Lands Bill.—Practically all the mineral deposits in Natal and Zululand, apart from a portion of the coalfields, occur in lands which it is proposed to include in native areas. The reason for this is obvious, the natives are to get the broken and disturbed country and the whites the table-lands.

It is in broken country where the older formations are exposed that mineral discoveries are mostly made. It is to be hoped that a clause will be inserted in the Bill to allow of prospecting and mining in native areas.

General.—Granted that the war has had a depressing effect on prospecting, the Natal mineral deposits should not be neglected in the way that is being done at present.

Practically no prospecting is going on. The country has been only scratched, and it is peculiar that whereas twenty-five years ago important discoveries were made, which would probably have become more important but for poor mining methods and little knowledge, nothing is now being done to try to discover fresh mineral resources.

Large areas in the older formations in Zululand have never even been examined.

Tin, for example, has been found within ten miles of Melmoth; it hardly seems possible that it should not exist anywhere else in Zululand, and quite likely in payable quantities.

If, in 1916, 1989z. of gold could be obtained with very little trouble from one spruit in Zululand, there is no reason why many other spruits and gulleys should not yield gold in payable quantity.

What is required is trained prospectors, who are not on the lookout for samples, but for properties. I am still confident that payable mines will eventuate in Zululand, but this is unlikely as long as the only prospectors working there are poor men who cannot afford to open up discoveries on a proper scale.

Mica.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—I have a mica property in this territory and am at present taking out mica from it averaging from 3 to 5 inches square from a big lode. I am out of touch with everything here, and being a regular reader of your journal, I thought that perhaps you might be able to tell me of someone who would be likely to purchase the mica as I mine it. I am 15 miles from a railway siding, so would be able to forward quantities regularly. I enclose a sample of the mica, from which you will be able to see the quality. Should you desire further samples or information I would be pleased to furnish same, if you would let me know what quantity you would like forwarded.—Yours, etc.,

T. LONGMORE.

P.O. Box 46, Macaquee, P.E.A.,
16th November, 1918.

New Heriot.

The following cablegram has been sent to London by the New Heriot Company: "In view of existing circumstances the board of directors regret they are not able to declare a dividend."

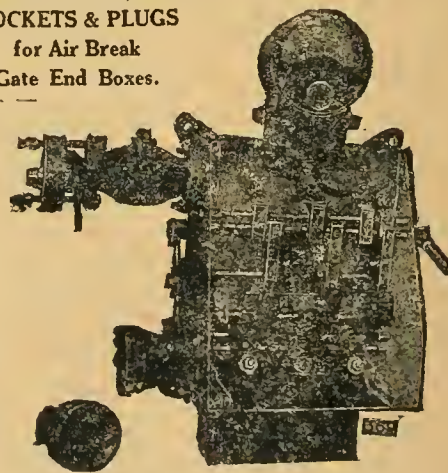
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THE WEEK IN THE SHAREMARKET.

A Brief Spurt and a Setback.

THE market was once again quiet at Saturday's call, but without any further falling away in prices. A good deal of business was put through in the forenoon, with a slight hardening tendency. Though somewhat early to make a forecast, it looks as if the worst was over and that the nervous holders have about finished dispossessing themselves of their holdings. On Monday morning the turn was again slightly upward. There were no sensational advances but an inclination to buy which if continued will harden prices. Knight Centrals was the stock most fancied and made 1s. over their last quotation. They soon began to drop back, but not to their previous level. The market firmed up during the course of the day and most stocks showed satisfactory advances. Tuesday's call was satisfactory, the overnight improvement being fully maintained, even tin stocks going better. The Modderfontein section was all to the good, especially in Modder Easts, which had suffered most in the recent setback, these, after change, going to 20s. 3d. African Farms also made up a good deal of leeway. The market continued to improve to the close, as the following prices at which sales were booked will indicate: Modder Easts, 20s. 9d. and 20s. 6d.; Van Ryn Deeps, 70s. 9d.; Springs, 67s. 6d.; Sub Nigels, 28s.; West Springs, 24s. 3d.; African Farms, 16s. 3d. At the opening on Wednesday Sub Nigels were in good demand at 28s. 6d. and 28s. 9d. There was a sale of Springs at 67s. 6d. and this was all the business that went through. The call was lacking in interest and the previous day's activity was missing. Pretoria Cements and Rand Selections were better as also Geduld Props, Springs and Van Ryn Deeps. Modder Easts came easier. The remainder were practically unchanged. Kleinfonteins are a very weak feature at present and the Johnnies report only raised the price of the stock 1s. on yesterday's buying offer. The market was quiet throughout the day and closed easier, with the exception of Pretoria Cements and Hume Pipes, which made respectively 68s. and 30s. At Thursday's call Van Ryn Deeps, Geduld Props, Modder Deeps and City and Suburbans, among the important stocks held their own. The remainder were all easier. Practically nothing was done during the past week in outside stocks. There was a sale of Henderson's Options at 1s., and the following were only dealt in with odd lots: Sakalavas, 7s. 6d. and 7s.; Mauss Syndicates, 45s.; Monte-leos, 22s. 6d.; Makganyene Diamonds, 30s. Other quotations were: Sellers of Union Tins, 6s. 6d.; Lydenburg Lands, 1s. 9d., 2s.; Phoenix, 11d., 1s. The spurt has been a very short one and it is impossible to foresee whether there will be a period of quiescence or another setback. So far there have been very few offers to sell on time.

There were dealings in only nine stocks on Friday at the call with the following changes in prices. Sales: Eastern Gold Mines, 1s. 9d.; Knight Centrals, 5s. 9d.; Nourse Mines, 16s. 9d.; Rooibergs, 8s. 2d.; Simmer Deeps, 2s. 6d.; Springs Mines, 66s. 9d. Buyers and sellers: Frank Smiths, 3s. 6d., 3s. 9d.; Geduld Proprietary, 37s., 37s. 6d.; Government Areas, 91s., 92s.; Hume Pipes, 30s. 6d., 31s.; Modder Bs., £7 16s. 3d., £7 18s. 9d.; Modder Deeps, £7 10s., £7 12s.; Witbanks, 51s., 54s.; Zaaiplaats, 15s., 15s. 3d.

	Fri., 22nd	Sat., 23rd	Mon., 25th	Tues., 26th	Wed., 27th	Thurs., 28th
African Farms	15 8	15 6	15 6*	16 3	16 0*	15 10
Ang.-Amer. Corp. . . .	—	31 3*	32 6†	—	32 6†	27 6*
Apex Mines	7 1	7 2	7 0*	7 3*	7 0*	7 6
Bantjes Cons.	2 6*	2 6*	2 6	2 6*	2 6*	2 6
Brakpan Mines	70 0*	71 0	70 0*	70 0*	70 0*	—
Breyten Collieries . . .	11 3*	12 6†	11 3*	—	11 0*	11 0*
Brick & Potteries . . .	—	3 9*	3 9*	3 9*	3 9*	—
Bushveld Tins	0 10	0 10*	0 8*	0 9*	0 9*	0 10
Cinderella Cons. . . .	5 0*	5 0*	5 0	5 0*	5 0*	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 22nd	Sat., 23rd	Mon., 25th	Tues., 26th	Wed., 27th	Thurs., 28th
City & Suburbans . . .	8 0*	8 6	8 3*	8 0*	8 0*	8 3
City Deeps	50 6*	50 6*	50 0*	51 0*	50 6*	51 0
Clydesdale Colls. . . .	20 0*	20 0*	20 0*	20 0*	20 0*	20 0*
Con. Investments . . .	—	—	—	—	21 0*	21 0*
Con. Langlaagtes . . .	—	—	20 0†	—	—	20 0†
Con. Main Reefs	12 9*	12 9	12 9	12 3*	12 3*	—
Con. Mines Selection . .	—	24 6*	24 6*	24 6*	24 6*	25 0†
Coronation Colls. . . .	47 6*	—	46 0*	48 3*	47 6*	47 6*
Coronation Freeholds . .	1 1*	1 1*	1 3*	1 5	1 3*	1 3*
Crown Diamonds	—	4 0*	4 0*	4 0*	4 0*	4 0*
Crown Mines Deb. . . .	£100*	£100*	£100*	£100*	£100*	£100*
Daggafontein Mines . .	24 0†	23 0	22 6*	23 3*	24 0†	23 6
Do. Options	5 0*	5 0*	6 0†	5 0*	5 0*	5 0*
East Rand Coals	2 1*	2 1*	2 1*	—	2 0*	2 2*
East Rand Deeps	0 10	0 10*	0 10*	0 11*	0 11*	—
E.R. Minings	17 6*	17 6*	17 6*	17 6*	17 6*	17 6*
East Rand Props. . . .	5 6*	5 3*	5 6*	5 9*	5 6*	—
Eastern Golds	1 3*	1 6†	1 6†	1 9*	—	1 9†
F. Smith Diamonds . . .	3 3	3 3	3 0*	3 0*	3 2*	3 1*
Geduld Props.	35 3*	35 3*	35 6	35 9*	36 6	36 9
Glencairns	2 0*	2 0*	2 0*	—	—	2 0*
Glencoe Collieries . . .	—	6 0*	5 6*	6 6†	—	—
Glynn's Lydenburgs . .	24 3†	—	—	—	—	25 0†
Govt. Areas	90 0*	90 3	90 0*	91 6	91 0	90 6*
Jhbg. Bd. of Execut. . .	28 0*	28 0*	28 0*	28 0*	28 6*	28 6*
Jupiters	4 6*	4 6*	4 6*	4 9*	5 0	4 9*
Klerksdorp Props. . . .	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Knight Centrals	5 2*	5 3	6 0	5 11	5 11	—
Knights Deeps	6 0*	6 0*	6 6	—	6 0*	6 3*
Lace Props.	12 6	11 9*	11 6*	12 3	12 2*	12 0*
Leeuwpoot Tins	25 6	25 9	26 0*	27 6	27 3	27 0
Luipaardsvlei Estate . .	—	—	—	—	1 0*	1 0*
Lydenburg Farms	8 7	8 8	8 6*	8 9	8 7*	8 7*
Meyer & Charlton . . .	—	—	—	87 6*	—	90 0*
Middelvlei Estate . . .	—	—	1 0*	1 0*	—	—
Modder B	152 6*	155 6*	155 0*	160 0*	162 0†	157 6
Modder Deep	148 0*	148 6	149 6*	151 0*	152 0*	152 6*
Modder Easts	19 0	18 6	18 9*	19 10‡	20 3	19 9
Do. Opts. (3 yrs.) . . .	5 3	5 5	5 3*	5 9	5 10†	5 9†
Do. Opts. (4 yrs.) . . .	6 1*	6 6	6 3*	6 9	6 0*	6 6*
Hume Pipes	27 6*	27 6*	27 6*	27 6*	28 6*	29 0*
Natal Navig. Colls. . . .	20 0*	20 0*	20 0*	20 0*	20 0*	20 0*
National Banks	£14*	£14*	—	—	—	—
New Boksburgs	0 11*	0 10*	0 10*	0 11*	0 10*	1 0*
New Eland Diams. . . .	25 0†	—	—	25 6†	26 0†	25 0†
New Era Cons.	—	9 9*	9 9*	—	9 9*	10 0
New Geduld Deeps . . .	5 9*	5 9*	5 9	5 9*	6 0†	5 9*
New Heriots	12 6*	12 8*	12 6*	12 6*	12 9*	12 9*
New Kleinfonteins . . .	11 6*	11 3	11 0*	11 0	10 9*	11 0*
New Modders	—	£26‡	£26‡	£26‡	£26‡	£26 3-16*
New States	20 0A	20 3	20 6	20 4‡	20 0*	20 0*
Nigels	5 0†	—	4 6*	4 6*	4 6*	4 6*
Nourse Mines	17 0*	17 0*	17 0*	17 0*	17 0†	16 0*
Pretoria Cements	62 6*	62 6	63 9*	65 0	67 6	68 0*
Princess Estates	3 1†	3 1†	—	2 10*	3 0	2 0*
Rand Collieries	2 9*	2 9*	2 9*	2 9*	2 9*	2 9*
Rand Nucleus	1 5*	—	1 5*	1 6*	1 6*	1 6*
Rand Select. Corp. . . .	80 0*	—	80 0*	81 0*	82 6	85 0†
Randfontein Deeps . . .	5 3*	5 3*	5 3	5 4*	5 4*	5 4*
Randfontein Ests. . . .	15 0*	14 9*	15 6†	14 9*	14 9*	—
Rooibergs	8 0*	7 6*	8 3*	9 0	8 9	8 0*
Roodepoort Uniteds . . .	3 0†	3 0†	3 0†	2 6*	3 0†	3 0†
Ryan Nigels	3 3*	3 3*	—	3 3*	3 3*	3 3
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Simmer & Jack	—	—	6 0†	6 0†	—	—
Simmer Deeps	2 0*	1 9*	2 0*	2 0*	2 3	2 1*
S.A. Alkali	40 0*	40 0*	43 9	45 0*	40 0*	42 6*
S.A. Breweries	30 0*	34 0†	31 6*	35 0†	35 0†	35 0†
S.A. Lands	6 3*	6 0*	—	6 3	6 5	6 3*
South van Ryn	12 3	12 3*	12 3*	12 3*	12 9	12 9
Springs Mines	66 3	66 0	66 6	67 0	67 9	67 3
Sub-Nigels	26 6	26 6*	26 9*	26 9*	28 9	28 0
Swaziland Tins	—	—	—	—	31 0†	31 0†
Trans. Lands	22 6*	—	22 6*	22 6*	22 6*	24 6†
Trans. G.M. Estates . . .	14 6†	14 6†	—	13 6*	—	—
Van Ryn Deeps	69 0A	69 3	69 3*	69 6*	70 9*	71 3
Village Deeps	17 0*	17 0*	17 0	16 6*	16 0*	16 0*
Village Main Reefs . . .	—	—	—	10 6*	—	11 0*
Welgedachts	27 6†	—	—	—	—	27 6†
West. Rand Estates . . .	—	2 0*	2 0*	—	—	—
West Springs	23 9	23 3	23 6*	24 0*	24 3	23 9
W. Springs Options . . .	10 6A	10 3*	10 3*	10 3A	—	10 3
Witbank Collieries . . .	50 0*	50 0*	50 0*	51 6*	—	50 0*
Witwatersrands	—	—	19 0	19 0*	—	—
Wit. Deeps	12 9*	13 0*	12 0A	13 0*	13 0*	13 0
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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

British Government Release Shipping—Pushing Trade—German Goods—Freight:
What It Means—Iron and Steel—Trend of Business—Time Given to Debtors—South
African Timber.

SHIPPING is the thing that matters to-day, and it is surprising how quickly the British Government is tackling the question. As an announcement was made at the beginning of the week that in accordance with instructions from the Ministry of Shipping, all outward and homeward rates of freight by Conference line steamers are to be reduced forthwith by approximately 25 per cent. In addition to this, the Union Castle Company has had two cargo steamers and one passenger ship released and handed over by the British Government this week. Evidently superhuman efforts are being made by the Imperial authorities to foster and encourage the export trade, which had been in existence before the war. There is a lot of talk about what Germany has in hand in the shape of manufactures, more particularly enamel and hardware goods, and undoubtedly letters leak through now and again in support of this theory. It also stands to reason that the Central Powers and neutral countries have not been idle during the past four years without manufacturing goods of some kind for the purpose of selling them and so give them gold to purchase raw materials. And obviously the Allies having forbidden the German mercantile flag to be flown at sea until peace is signed is a sure indication that they must have a fleet of merchantmen ready to put to sea, otherwise why such an embargo? Whenever these goods come out, and leak out they will into the markets of the world, they will be cheaper than those at top wages, as the best of information is that Germany gave a very poor war bonus to their workers. Hence another reason why some kind of goods will be cheaper in the near future.

FREIGHT CONDITIONS AND VALUES.

The ordinary merchants dealing in mining material are thoroughly conversant with rates. However, the man in the street will be apt to mislead himself as to the real importance of a 25 per cent. reduction in shipping freights by the Conference lines. As it will give people a handle to talk about a 25 per cent. reduction generally, which in freight is not of much consequence on many lines. For example, the freight was to Durban 125s. for drapery, electric lights, etc.; now it is 31s. 3d. less, then 70s. the war risk percentage on values a short time ago and 5s. London dock risks, making £5 6s. 3d., less 2s. 6d., the present war risk. An electrical merchant considers it will make a difference of 3d. per light, as these come by measurement and not by dead weight. A scale maker was heard to remark that it meant about 5 per cent. off values for him.

Taking iron and steel, where the freight is 95s. to Durban, the 25 per cent. represents 23s. 9d., then come the war risks and other lesser charges, thus giving about 5 per cent. off values, as compared with ordinary war times. However, many merchants contend that the extra cost of mining material in Britain will more than set off any privileges already granted in freights, etc. The reason given for the extra manufacturing costs is that the maximum allowed by the British Government when under its control was up to 20 per cent., which was not sufficient considering the extra cost of labour and raw material. However, as previously remarked in these columns, Johannesburg and these gold fields are not altogether dependent upon Great Britain as large quantities of goods and mining material come from America, Canada, Japan, etc.

IRON AND STEEL.

Reuter is officially informed by the Controller of Imports and Exports, Pretoria, that cable information has been received from the British Embassy at Washington to the effect that export licences will now be granted freely for all old orders of finished steel products, and all outstanding orders which have been recommended by the Controller of Imports and Exports are now being re-submitted by the British Embassy at Washington. Restrictions on semi-finished steel and pig iron will for the present be continued.

As regards local business it is almost at a standstill, only just sufficient being done for daily or weekly requirements. There is a lot of mild steel on the way from America and it is difficult to ascertain correct prices.

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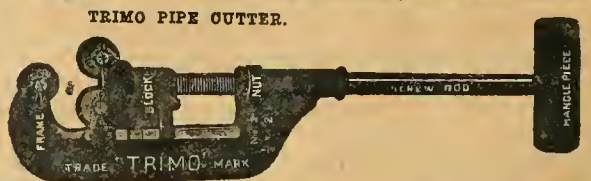
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TREND OF BUSINESS.

The chief buying office is still resting on its oars, simply doing nothing excepting in very special cases, as it is still awaiting cable news in reference to the post-war position. Naturally the mines are using from reserve stocks, thus making business on the Commercial Exchange exceptionally dull. Even the municipalities are holding back, and obviously the railway will, now that the General Manager has gone to London with the view of buying railway stores from the British Government's war stocks. No one can object to this, but if several millions' worth are bought direct, it makes Johannesburg the poorer by the commission that would have been earned in the ordinary course of business. Another reason for poor earnings is that it is surprising what amount of speculation has been going on by people having money and who have purchased a lot of goods on their own and friends initiative, that they never touched before. Now they are caught and cannot sell, simply because buyers are only just getting sufficient for immediate requirements. A general shipper expressed surprise at the amount of speculation coming to light since the armistice was signed. It has not been restricted to any particular class of goods, but an all-round scramble, most of the speculators thinking the war would last for another year or so. Several meetings of creditors have been held and time has been given in two known cases; however, these were not in the mining material line.

TIMBER.

There is a slight inclination for an easier tendency in values, chiefly in consequence of the influenza, peace news and the end of the year approaching, checking the new building operations. So much so that contractors are contenting themselves in recognising the fact that only a very few tenders will be put out this side of Christmas. As regards the future of imported timber, an expert thinks now that the Conference lines freight has come down the Swedish freight also will be reduced. He also maintains that South African timbers will play a greater part in our consumption than in pre-war days. The position has been forced upon us and it is found that the mines can use S.A. timbers for many purposes, even better than the imported, as the wood is harder and more lasting, especially in wet mines. And S.A. deals are not at all bad for outside work, also other woods for furniture-making, box-making, and so forth. He recognised, however, that the Baltic timber for the majority of buildings cannot be substituted, although the brown woods are excellent for decorations, stair cases, and furniture built into the walls, and such like. The forecast for the Baltic timber trade is not an easy one, although it can be taken for granted that prices will not remain at the present high levels. It is difficult to say what quantity of Baltic woods are to be used for paper-pulp purposes, as

many substitutes have been found during the war period. For example, in Zululand there is a company recently formed for making paper-pulp out of papyrus reeds, and one hears of many substitutes for wood-pulps that may assist from depleting the forests too much for their more legitimate use for building purposes. Surprise was expressed at the fact that S.A. deals were 1s. 6d. per foot, when the answer was made that 1s. 3d. was nearer the price. Undoubtedly the general idea has been to base prices on that of the imported article throughout the local manufacturers, produce and timber lines—to charge as near as possible to the imported price and not to worry about costs with reasonable profits added.

SECOND-HAND MATERIAL.

A sale on Wednesday, amounting to over £10,000, for mining machinery, stores, spares, etc., realised according to the auctioneer a fair amount considering the times. A machinery dealer who attended states that the prices on the whole were about 33½ less than a similar sale a few months ago. It so happened that some of the boilers and machinery were held over from the sale in question, and from that it was easy to judge what was then offered and what was accepted on Wednesday. Otherwise enquiries about second-hand material are very quiet indeed.

TRADE JOTTINGS.

The ironmoulders' strike, it is expected, will come to an end this week and the artisans commence work on Monday next, December 2nd. It is pretty well understood that this will relieve the labour position as regards strikes. It may also assist in keeping some of the poorer mines open.

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BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s. 2/4 1-5 galls.; 10-1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ½in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 2loz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate (Japanese), 14/6 lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 40s. to 45s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 46s. to 50s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ½in. and 3-16in. round iron, 95s. to 100s.; ½in. do., 85s.; ½in. steel, round, 80s.; ½in. round iron, 77s. 6d.; do. steel, 72s. 6d.; ½in. round iron, 70s.; do. steel, practically none in town; ½in. round iron, 62s. 6d. to 65s.; ½in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron has advanced and is now sold by storekeepers at 45s. per 100 lbs. Vereeniging mild steel also 50s. per 100 lb. Steel plates, 80s. to 90s.; many sizes unobtainable. Hexagon and cuphead bolts, ½in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ½in. diameter up to 3in. long, 2s. 6d. lb.; ½in. dia., 1s. 6d.; 3½in. and up long, 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb.; ½in. dia. and 2½in. up long, 75s. per 100lb.; ½in. dia. up to 2½in. long, 1s. 6d. per lb.; ½in. diameter 2½in. and up long, 60s. per 100lb.; ½in. diameter, 2½in. and up long, 1s. per lb.; ½in. and lin. diameter, same price as ½in. diameter; nuts, ½in., 1s. 3d. per lb.; ½in., 85s.; ½in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ½in., 1s. 6d. lb.; ½in., 75s. to 80s.; ½in., 72s. 6d.; ½in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

Chemists' Work in the War.

Professor J. A. Wilkinson presided at the monthly meeting of the South African Association of Analytical Chemists at the S.A. School of Mines, Johannesburg. Before proceeding to the business of the meeting, he said the cessation of hostilities which had followed the signing of the armistice had plunged the world into a new era, which they welcomed with heartfelt thanksgiving after the terrible price which had been paid for it. They hoped that the doctrines which had actuated those whose fiendish machinations and criminal calculations foreordained the cataclysm would be buried for ever in its ruins, and that the era of peace which had just dawned would be worthy of the sacrifices offered to create its birth. The last four years, he continued, had seen members of their profession striving with might and main to encompass destruction on the one hand by highest technical services, firstly in the manufacture of explosives, and secondly of those metals necessary for the engineer in the making of guns. On the other hand, many of their members had been engaged in augmenting the food supply by making possible the fertilisers necessary for plant growth. Also in many other ways had the chemists' work been indispensable and possibly in no greater manner than in the manufacture of drugs for the pharmacist and medical practitioners, both at home and in the field. These services had been epitomised in the saying that this had been the chemists' war, and, without unduly emphasising the value of the services which chemistry had rendered, this was a truth which could hardly be disproved, though possibly it might be difficult for the man in the street to encompass its fuller meaning. Owing to this fact, the profession had been harassed in a manner which otherwise would have been impossible, and incidentally, this had been of great benefit, as it had served to create a union and brotherhood in the profession, which must make for future advancement and progress. For this they could feel naught but thankfulness, though this was tinged with the sadness of regret at the great losses which had come nearest to them, those members of their Association who have laid down their lives in the great fight, Messrs. Vipond and Koenig. In respect to the memory of their gallant co-workers, he would ask them to stand. The members all stood for a short time, and the meeting then proceeded to discuss the following papers which were presented: "Notes on Natal Coal," by Mr. J. S. Jamieson, F.I.C., and "Notes on Iodine in Nitric Acid and Sodium Nitrate," by Mr. E. A. White.



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S.A. Society of Civil Engineers.

At a meeting of the South African Society of Civil Engineers, held at Capetown last week, and presided over by Mr. A. D. Tudhope, nominations were received for the election of office-bearers for the 1919 session. Mr. W. Craig, who is a foundation member of the society, was returned unopposed as president, Mr. T. W. W. Perry as hon. treasurer, and Mr. Geo. Stewart as hon. secretary. A postal ballot will be taken for the election of ordinary members of the Council. The *ex officio* members of the Council will be Prof. Snape, Mr. R. W. Menmuir, and Mr. M. D. Robinson (past presidents). It was decided that a message be sent to His Excellency the Governor-General conveying the society's sense of deep thankfulness and gratification at the conclusion of the armistice with Germany. In the course of a valedictory address, the retiring president (Mr. M. D. Robinson) dealt with a few problems in connection with railway construction in this country, and an analysis of the grounds on which the decisions taken were arrived at. Regarding the question of gauge, he remarked that, although the wisdom of departing from the standard of construction of the first railways built in South Africa, viz., 63½ miles in the Cape Colony, and 5½ miles in Natal, had often been questioned, at the time this matter was under consideration (nearly 50 years ago), no one could foresee the immense mineral resources that within a comparatively few years would be discovered in the Transvaal and, although a wave of prosperity was then passing through the country as a result of the discoveries on the diamond fields, the life and magnitude of that industry had still to be proved. Some saving would certainly have been effected in the cost of operating the wider gauge, the net earnings being correspondingly increased, and the deficit reduced; nevertheless it was quite obvious that, under the conditions prevailing at the time the matter was under consideration, the Colonial Government were quite justified in departing from the English standard gauge and practice which had been followed in the construction of the Capetown-Wellington railway, as, unless the lines which it was proposed to construct (aggregating about 859 miles) could be built at about half the cost per mile paid for the Wellington railway, a very

severe tax would have been imposed on the resources of the Colony by the annual deficit on load charges to be met from general revenue, with the consequent result that the expansion of the railway system would have been checked, while the delay in providing improved facilities for transportation would necessarily have impeded the development of the Colony. Touching on the question of non-paying branch lines, Mr. Robinson observed that the fact that the State was fully justified in offsetting against the direct losses incurred on branch lines, the increased prosperity and development in the districts served by non-paying lines, could not be more forcibly demonstrated than by considering what would happen if all such lines were closed down. It had always appeared to him that branch lines should be credited with a percentage of the net revenue earned by the main lines from the freight received from or delivered to the branch lines. Discussion was taken on the following papers: "Reconstruction of Bridges, North Coast Line, Natal," by Mr. G. Reynolds; "Selborne Avenue Bridge, Bulawayo," by Mr. A. H. Walter; "Field Water Supplies in the East African Campaign," by Mr. A. C. Jennings. A vote of thanks was accorded to each of the authors.

National Bank's Increase of Capital.

THE FOSTERING OF LOCAL INDUSTRIES.

The Hon. Hugh Crawford presided in Pretoria over an extraordinary general meeting of shareholders in the National Bank of South Africa, Ltd., convened to consider the proposal to increase the capital from £3,000,000 to £4,000,000, with discretion to the directors as to when and how the new issue should be made. The directors and shareholders present were Messrs. J. Emrys Evans, P. Duncan, E. J. Renaud, H. O'K. Webber, E. Haines, F. W. Meadley, T. B. Herold, J. Rissik, F. Heys, W. Dunlop, A. C. Duff, A. Sutherland, W. Fitzgerald, A. T. Brook, E. Rooth, R. Walker, R. Hamilton, E. C. Reynolds (general manager), and C. P. Mathews (secretary). The Chairman, dealing with the business of the meeting, said: This is a special meeting of the shareholders convened for one specific purpose, as is mentioned in the published notice regarding it. This purpose is to ask shareholders to vest in the board of directors discretionary power to issue further capital when the board considers it advisable. This capital would be issued on such terms as the board considered advisable. This capital would be issued on such terms as the board considered advisable. The amount of the issued capital already sanctioned by shareholders is £3,000,000, and the bank in terms of its constitution is empowered to issue capital to the total extent of £4,000,000. As yet the board has not taken full advantage of the previous authority granted by shareholders, as our issued capital stands to-day at £2,865,000 against the £3,000,000 authorised. I should like to emphasise that the board has no present intention—should you agree to the resolution that is now to be presented for your consideration—to increase the capital, except possibly to a moderate extent. The future, however, is charged with momentous events, and at any moment we

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might desire to quickly avail of the advantage of additional capital to enable us to deal with developments. We are required by our articles of association to give sixty days' notice to shareholders when calling them together, and it is felt that this somewhat long period might prove a handicap and prevent us from availing of important opportunities. Consequently we feel it to be in your interests that the board should be provided with the discretion for which it asks. You will have learned of the initiation of an industrial corporation to finance new industries, and to foster industries already existent, in South Africa which are in need of assistance to develop along sound lines. This corporation, I am convinced, will be no immaterial factor in the advancement of the country from an industrial point of view. The bank will take participation in the scheme, and it is possible in this connection that if shareholders grant the necessary discretion to-day your board may issue a moderate amount of new capital for the purpose indicated. It is, on the other hand, possible that to take participation it will not at present be necessary to increase our capital at all. It is the feeling of the board that, should it be found desirable to increase our capital to any material extent, all shareholders should have the opportunity of subscribing. At the present time British Treasury regulations will not permit of oversea shareholders having this privilege. I now formally move that the capital of the bank be increased to £4,000,000 by the creation of 100,000 shares of £10 each, to be issued in such manner, at such times and upon such terms as the directors shall from time to time determine. Mr. Emrys Evans seconded the motion, which was agreed to without discussion.

Many causes have contributed in recent years to the development of a strong movement towards the electrification of steam railways in this as in other parts of the world, and while, no doubt, little can be done towards this end during the war, there is every reason to believe that when peace returns this will become one of the most important and pressing questions that will then arise. Amongst the factors which have influenced the growth of opinion in this direction may be cited the urgent necessity of economising fuel, the scarcity of labour, the dearth of raw materials, and the need for improvement in transportation facilities. In countries which possess but scanty fuel resources, or none at all, such as Switzerland and Italy, but which are blessed with an abundance of natural water power, the adoption of electric traction is obviously inevitable, and plans are being projected on an enormous scale to carry out schemes of a most comprehensive nature. Proposals have been submitted by the managers of the Swiss Federal Railways to the Council of Administration which involve an expenditure estimated at from £120,000,000 to £160,000,000, to be spread over a period of 30 years. In Italy preparations are under way for the electrification of the whole of the railways in the north, together with the supply of electricity for all industrial purposes on a gigantic scale. France, like Italy, already possesses a considerable mileage under electric traction, and contemplates important developments in this respect, while Norway and Sweden have carried out noteworthy schemes, and have large projects in view. In the United States we find the greatest development, for there electric traction has been put to the severest tests in main-line operation, and has been proved capable of handling the heaviest loads on stiff gradients with efficiency and reliability far in advance of steam haulage. In all these countries large supplies of water power are available, and the arguments in favour of electrification are irresistible. But even where fuel is the only source of electric power, a very strong case has been made out for the conversion of the railways; it has been proved beyond question that very great economies of fuel result from the substitution of electric for steam power, that the number of electric locomotives required to maintain the service is far less than in the case of steam, and that important economies are made also in operating and maintenance staff and in the cost of repairs.

The possibility of recuperating energy that would otherwise be expended in braking on long gradients has also been demonstrated in actual practice, and the greatly-increased traffic which can be handled on electric railways is a powerful argument in favour of the newer system. The fact that, in the words of an American authority, "to-day electrified installations make use of the very heaviest high-speed, heavy-tonnage equipment in the world," speaks for itself; the same authority remarks that "the unquestioned reliability of this form of motive power has been proved in the severest service"; and it is reported that Mr. McAdoo, Secretary of the U.S. Treasury and Controller of Railways for the War, is seriously considering the idea of electrifying the whole of the railways of the country.

New Patents.

- 644. Basil Heber Tilston and Thomas Melbourne.—Improvements in or relating to the treatment of hides, skins, or other goods.
- 645. Luke Vincent Lockwood.—Machine for making bottles, etc.
- 646. Thomas William Stainer Hutchins.—Improvements relating to muffle furnaces.
- 647. Frederick Edmund Berry.—Improvements in or relating to electrical transformers.
- 648. Percy Octavious Rowlands.—Improvements in and connected with liquid fuel internal combustion engines.
- 649. Agricultural Co-operative Union, Ltd.—An improved hydraulic baling press.
- 650. Ray C. Newhouse.—Comminuting mill.
- 651. Valborg Hansen.—Improvements in resilient metallic and like tyres for wheels.
- 652. Frederick William Leeds and Cecil Thomas Mitchell.—A discharging device for liquids from air-tight containers.

TRANSVAAL AND DELAGOA BAY INVESTMENT COMPANY, LTD.

(Incorporated in the Transvaal).

NOTICE is hereby given that the ORDINARY ANNUAL GENERAL MEETING OF THE COMPANY will be held in the Board Room, Exploration Buildings, Johannesburg, on TUESDAY, the 10th DAY OF DECEMBER, 1918, at 4 p.m. precisely, for the following purposes:—

1. To receive and consider the Balance Sheet and Profit and Loss Account for the year ended 31st August, 1918, and Reports of the Directors and Auditors.
- 2.—To declare a Dividend.
3. To elect Directors in the place of those who retire in accordance with the provisions of the Articles of Association.
4. To appoint Auditors for the ensuing year, to fix their remuneration, and to transact the ordinary general business of the Company to be dealt with at such meeting.

The Transfer Books of the Company will be closed from the 4th December to the 10th December, 1918, both days inclusive.

Holders of Bearer Shares who desire to attend or vote at the meeting must deposit their Warrants at the Head Office of the Company, in Johannesburg, at least 24 hours before the time appointed for the meeting, or at the London Office not later than the 19th September, 1918.

By Order of the Board,

B. MOSES,

Secretary.

The Transvaal Gold Fields Building,
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2nd September, 1918.

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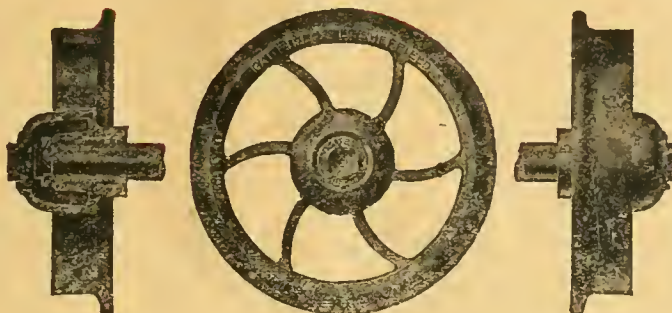
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Natal Agents :
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Smith Street, Durban.

Company Meetings.

JOHANNESBURG CONSOLIDATED.

Mr. John Munro presided at the annual meeting of the Johannesburg Consolidated Investment Company, Ltd., on Nov. 26, which was held in the board-room, Consolidated Buildings.

There were present: Messrs. G. Imroth, C. Marx, H. A. Rogers, J. Emrys Evans, P. Richardson, C. Aburrow, H. A. Baily, T. Bertram, E. W. Bond, E. Brayshaw, A. Campbell, J. Andrew Cohen, J. H. Crosby, H. Cundall, Col. W. Dalrymple, L. Edwards, W. Fergusson, R. P. Fitzgerald, G. C. Fitzpatrick (representing Mr. J. Friedlander), H. Gregor, D. C. Greig, C. Grosser, J. D. Goldsbury, F. Hilner, E. M. Hind, E. M. Hymen, S. Harbottle, J. Jacobs, F. Jacobs, Emile Levy, J. Lytle, G. Lipman, J. H. Mackie, J. E. Mackinlay, W. A. McKenzie, J. Neilson, C. M. Neustetel, H. Newhouse, A. C. B. Meiklejohn, J. R. Nicholson, R. Orr, G. M. Pemberton, T. Petyt, W. Reid, J. Reinier, J. F. Rutherford, C. Sampson, J. Stephen, A. Silver, G. Sonn, A. Sprinz, S. Thomson, Senator W. K. Tucker, H. Vickers, H. L. L. Wainerlein, W. T. Warrenner, W. S. Wehber, E. Wilkinson, D. Wilkinson, W. L. White, R. Wridgway. The secretary (Mr. W. H. Mardall) was in attendance.

CHAIRMAN'S SPEECH.

The Chairman said:—Gentlemen,—We are met together to-day to consider and, if approved, to adopt the directors' report, balance-sheet and profit and loss account for the financial year ended June 30th, 1918. The report and accounts were duly circulated to the South African shareholders on the 9th inst. I regret that owing to the unavoidable delay in the receipt of our London Office figures and advices, it was impossible to issue the same at an earlier date. In examining the accounts and the position and progress of the company, I must ask you to remember that they cover the fourth year during which we have been working under war conditions. Bearing this factor in mind, gentlemen, I am of opinion that we have every right to congratulate ourselves on the facts and figures submitted for your approval to-day, and to be well satisfied with the financial position of the company. I shall now proceed to review, as briefly as possible, the principal figures of our accounts. On the liability side you will note that there has been no change during the financial year in the capital of your company, which stands at £3,950,000. Your reserve fund of £250,000 remains intact.

Sundry Creditors, £369,599.—A decrease in your liabilities of £228,000 is reflected under this heading, which represents the withdrawal of monies temporarily deposited with us in London by the various mines of our group, and which monies could be employed to better advantage in South Africa.

Contingent Liabilities, £559,191.—The large increase of £477,072, shown in our contingent liabilities, represents the balance of the partially-paid interest we have acquired in the New State Areas, Limited, of which the chairman informed you at our last meeting. This money will only be called up from time to time to meet the requirements of the mine, as development proceeds. I would, however, here ask you to note that

the total amount of our contingent liabilities only represents approximately two-thirds of our absolutely liquid assets.

Asset Side of Balance Sheet.

On the asset side of the balance-sheet the first item is investments in stocks and shares, £3,317,058.—The "book value" of our holdings in stocks and shares shows a decrease of £223,000, as compared with the figures at June 30th, 1917. This decrease represents the value of shares realised plus the amount written off for depreciation, less the cost of new shares acquired during the financial year. As in previous years, the "book values" of our shareholdings have been written down to their absolute "market value." You will readily understand that in view of the serious international complications of the world's money markets, it was necessary for your directors to make ample provision in this direction, and though the amount provided is a large one, we trust it may be regarded more as a prudent precaution than an ultimate loss. At to-day's market prices the value of our shareholdings reflects a very large appreciation over the amount at which they appear in the balance-sheet, but no credit is taken for this in our accounts. You will be pleased to hear that this appreciation reflects an increase on the figure quoted last year.

Mining properties and Advances to Mining Companies, £69,438.—This account reflects a small increase of £8,000, being a temporary loan to one of our mining companies, since paid off.

Real Estate.

Real Estates and Buildings, £538,743.—The total of this asset is made up as follows:—Johannesburg properties, £303,345; Johannesburg Suburban Estates, £93,376; other properties in South Africa, £37,053; property in London, £104,969. Total, £538,743. The total is £23,000 less than last year, which is accounted for by the amount written off for redemption of our ground rent capitalisation account plus the book value of building lots sold on our suburban estates. The Municipal Council valuation of our town properties and suburban estates is at date £581,682, which reflects a surplus over the value at which they stand in our books of £185,000.

With a view to assisting the development of the lower portion of the Houghton Estate we are constructing a new road, at the cost of some £8,000, connecting the upper and the lower portions of the estate. This road, when completed, will undoubtedly be one of the most beautiful drives in Johannesburg, and should prove a great attraction and convenience to residents in this neighbourhood. I regret being unable to report any reduction in the heavy burden of municipal taxation.

Lourenco Marques Properties.—Our town properties at Lourenco Marques are all well let and continue to yield a fairly satisfactory revenue. In order to develop its magnificent Polana Estate, one of our subsidiary companies, the Delagoa Bay Lands Syndicate, Ltd., is considering, if suitable terms can be arrived at with the Portuguese authorities, the erection of a large hotel thereon. The hotel, if erected, will be a great acquisition to the town of Lourenco Marques, and

should prove a great stimulus to the trade and popularity of Delagoa Bay as a seaside health resort.

Carlton Hotel.—The improvement in the business of the Carlton Hotel, to which your chairman referred last year, has, I am pleased to be able to report, been well maintained, though during the past two months the revenue has suffered severely from the effects of the prevailing epidemic.

Loans on Mortgage and Real Estate, £86,450.—A decrease is here reflected of £37,718, and represents the difference between loans paid off (chiefly in London) and new loans granted. I am pleased to be able to state that all our loans of this nature are eminently satisfactory and amply secured.

Pre-War Loans, £102,660.—A further sum of £18,000 has been paid off these loans during the financial year, and I have no doubt that with the new conditions that will presently obtain the balance will shortly be liquidated.

Loans at Short Call on Market Securities, £455,943.—The figures under this heading are practically the same as at 30th June, 1917, a small increase of £2,000 only being shown. With the improved circumstances that may, I trust, exist in the near future, we shall be able to profitably employ more of our funds in this direction.

Fixed Deposit, £30,102.—This is a new item in our accounts, and represents the temporary utilisation of surplus funds that would otherwise be lying idle.

Sundry Debtors and Dividends Accrued, £245,089.—The increase of £47,000 here shown is mainly under the heading sundry debtors, and represents advances made to the gold mining companies of our group against native gold. These accounts are naturally of a fluctuating nature. The remaining items do not call for special comment.

Financial Position.

Gentlemen, from the facts and figures I have given you, I think you are in a position to fully grasp the financial position of our company, with which I trust you have every reason to be well satisfied. The total "book value" of our assets at 30th June last amounted to £4,928,894. This amount is exclusive of the very large appreciation in the value of our shareholdings. This total reflects a decrease as compared with the figures at 30th June, 1917, of £225,000, which mainly represents the balance of the provision made for any possible depreciation on our shareholdings to which I have already referred. Our liabilities to the public at the same date (exclusive of the dividend of 5 per cent., declared on the 24th June and paid on the 26th September last, and our "contingent liabilities") amounted to £369,599. Our assets at their "book value," therefore reflect a surplus over our liabilities of £4,559,295, practically the same as last year. Our absolutely liquid assets are approximately equal to the total of our liabilities to the public and our contingent liabilities. I venture to think, gentlemen, that very few financial corporations operating within our sphere of influence can show such a strong financial position.

Profit and Loss Account.

I now invite you to turn to the profit and loss account, from which you will observe that the gross profit for

the year under review amounted to £225,739, a small increase of £1,700 on last year's figures. Our working expenses, including income tax, war donations, staff bonus, etc., amounted to £35,000, a decrease of £4,380 as compared with the previous year. This gives us a net profit for the year of £200,739, about £6,000 more than for the previous twelve months. To this net profit we must add the sum of £158,556 brought forward from the previous year, making a total of £359,296. After deducting from this total the sum of £197,500, the amount of the dividend, we are left with £161,796 to carry forward, an increase of approximately £3,000. Gentlemen, after four years of endless anxiety and working under most trying conditions, it is a source of great satisfaction to your directors to have been able not only to maintain our dividend and provide for all depreciation out of the year's profit without encroaching on our reserve fund, but also to increase the amount carried forward.

Diamonds.—You will note with satisfaction from the directors' report that the arrangement made by your permanent chairman (Mr. S. B. Joel) for the control and disposal of the diamond output continues to work to the benefit of all concerned.

Gold Mining Companies.

I will now refer to the Gold Mining Companies of our group in which you hold large interests. As foreshadowed by the chairman at our last annual meeting, the gold production of our group of mines reflects a very considerable increase from £4,500,000 to £7,760,000, or nearly 75 per cent. Although the cost of production has increased enormously the selling price of the standard ounce of gold remains at the pre-war figure. You are doubtless aware that a committee has been formed in London to try to find some solution of this anomaly, and we trust to hear the result of their deliberations in the near future.

Consolidated Langlaagte.—This mine with the other mines of the Rand, has had many difficulties to contend with since the beginning of 1918. The year started off badly with the heavy rains which occurred in January and February. The consequent flooding of the mine interfered considerably with the progress of underground operations, and unfortunately very little shaft sinking has been possible. Shortage of native labour has been a source of worry throughout the year, and the influenza epidemic which broke out at the end of September added further to our troubles. There has been a continual rise in the cost of imported stores, and further increases of pay have had to be made to the European employees. All these factors have made for increased cost of working and lower profits. For October the working costs were over 20s. per ton, which is a rise of 3s. per ton as compared with the average for 1917. The development of the mine has been kept going regularly, and the ore reserves have been maintained. Good values were encountered in the lower levels at both the West and Eastern shafts, which, although somewhat patchy, showed a percentage of payability of slightly over 50 per cent.

Government Areas.

Profits on this mine have shown a steady and gratifying improvement for some months, and but for the epidemic ever better results would have been obtained. There has been a marked increase in the fathoms mined, combined with an increase in the mill grade, and we have fortunately been

able to maintain our scale of development with only some little sacrifice of the tonnage milled. The directors' policy has always been to place this property in a thoroughly sound position, and we feel sure this policy will command itself to shareholders. The reefs exposed by the development work are of excellent widths and values and there is no doubt that the ore reserve position at the end of the year will show a further substantial improvement on that for the previous year. The last underground connection between No. 1 and No. 3 shafts has now been effected and as the arrangement for increasing the fan capacity to 300,000 cubic feet per minute is now in hand, and will shortly be completed, a further improvement in the ventilation of the workings should result. The enlarged reduction plant is now in operation, although by reason of the native labour shortage it is not at present being worked to its full capacity. Increased war charges are a heavy item on this mine, and, including cost of stores, war bonuses and increased wages, active service allowances, increased gold charges, etc., amounted in August to £25,812, or 4355 shillings per ton milled. For the month of August the charge to working costs on account of development was 3s. per ton, and the total working costs were 19.78 shillings per ton.

In one respect only—that of native labour—can the position be said to be anything but satisfactory. The average number employed underground for September was 5,368—the highest in the history of the company. This figure fell to 5,106 for October, and at the middle of the present month to 4,730. The provisional agreement with the Government for the alteration of the sliding scale, which was submitted at our last meeting, has, I am pleased to state, been ratified by Parliament, and I am satisfied will prove advantageous to both parties. Since last we met this company has entered the list of dividend payers, having declared two dividends of 12½ per cent. in December and June respectively, and you may confidently look forward to improved dividends in future. You will have learned with much regret of the demise of the manager, Mr. Sudlow, who so capably managed the property for two years. To his relatives we offer our sincere sympathy. Mr. M. J. Turner has been appointed acting manager of this property.

Langlaagte Estate.

Satisfactory progress has been made at this mine during the year. The heavy rains which occurred in January and February had a serious effect on underground operations, but once this difficulty was overcome the monthly profits have shown a steady improvement, and the outlook to-day is promising. The grade of the ore milled has improved, and, notwithstanding the increased cost of stores and white labour, working costs have been kept in the neighbourhood of last year's average. Development work was considerably retarded by the flooding of the mine, but recently there has been a notable increase in the footage accomplished, and the average value of the reef exposed has been quite satisfactory.

Randfontein Central.

The present year has been one of almost continued difficulty. There have been strikes and floods, and at the present time we are suffering from a very serious native labour shortage. The floods were extremely serious. Practically all sections were more or less flooded for some weeks, and in the case of Block A and Mynpacht sections the increased amount of water has even now scarcely diminished to any

extent. The pumps have been working to their utmost capacity, and there have been constant breakdowns and hindrances to this work in consequence. Furthermore, the hoisting of ore from these sections has frequently been entirely interrupted for days on end, owing to the bad conditions of some of the shafts, and these causes have had a detrimental effect on the profits. There are employed underground in the mine at the present time only 12,750 natives, against an average of 15,084 for 1917, and 17,000 in the early part of that year. Every effort is being made to meet the position by the installation of machine drills, but there is an economical and practical limit to this, and the tonnage milled must necessarily be a good deal short of the capacity of the reduction plant until labour becomes more plentiful. No sinking has been possible in the Mynpacht incline shaft during the year by reason of the floods. The ore reserves in this section have been depleted, and at present only amount to 285,400 tons, whilst at the same time the tonnage milled had dropped to 10,300 tons in September. In face of this position, and as this mine is capable of producing from 20,000 to 21,000 tons under normal conditions, it has been decided to stop mining operations and confine the work to shaft sinking and development. Good progress has been made with the two new vertical shafts, which when completed will replace the shafts on the Porges, South, North, Robinson and Block A sections. At the end of October the north shaft had attained a depth of 1,716 feet, and the south shaft a depth of 1,894 feet. The redeeming feature on this property has been the continued excellent development results throughout the year, which for the first nine months averaged 7.2 dwts. over 13 inches stopping width over a payable footage of 26,255 feet. The increased cost due to the war on account of increased prices of stores and other war charges amounted to £19,396 for the month of August being equivalent to 2.83s. per ton. From what I have said you will agree that the disappointing results obtained were due to abnormal conditions which prevailed during the period; yet, with regard to the future, in view of the excellent development results in the lower levels and the good progress accomplished in sinking the new deep level shafts, I am confident that when these shafts come into operation the difficulties enumerated above will disappear, and the patience of shareholders will be duly rewarded.

Van Ryn Deep.

The additions to the reduction plant, bringing the capacity up to 54,000 tons per month, were completed and brought into operation early in July. The tonnage thereafter increased somewhat, though not to the extent anticipated. Costs were also higher, and, in consequence, profits, although well maintained, were somewhat lower than was hoped for. The effect of the influenza epidemic was not felt so seriously on this mine as on some others, and with an adequate supply of native labour it is hoped that an improvement in results will soon be shown. Development throughout the year has continued to expose reef of excellent width and value, as you will doubtless have noticed from the quarterly reports published. The amount of footage developed on reef is somewhat small for a mine of this size, but this is due to the fact that the lowest drives are being driven in footwall well under the reef. There are, however, ample slope faces available for single shift working, in fact some to spare, and the ore reserves position is very satisfactory. The increase in working costs on account of the high prices of stores and other war charges amounted to 3.334s. per ton milled from the month of August, of which stores alone accounted for 2.259s. Although the war is now practically over, there are still large quantities of stores, amounting to six months' supply, on the

mine, which stand in the books at high prices, and these stocks must be consumed before much improvement can be looked for under this head. When, however, the heavy burden due to the war has been relieved there must necessarily result a very considerable reduction in costs on this property.

Witwatersrand.

Recent results from this might have not been too satisfactory. The native labour supply is totally inadequate for the requirements of the mine, now that the ore from reclamation work in the outcrop section has fallen off, and consequently it is necessary to concentrate operations on the deeper sections. Costs have increased in common with all mines on these fields, but in addition they have been prejudicially affected by the heavy shortage in the tonnage milled, and the consequent undue incidence of the standing charges. The amount of ore mined from stopes has dropped considerably, and although the value of this rock is quite good, the mill grade has fallen about 2s. since last year, due to the necessity of including a larger proportion of reclamation and development rock of comparatively low grade. Development work since the beginning of the year has given about 50 per cent. payability, having a value of 400 inch-dwts. over the payable footage driven. These results are fairly satisfactory for this district, and when more normal conditions prevail, and especially if a better supply of labour can be secured, this mine should show improved results. The increased cost due to the rise in prices of stores and on account of other war charges amounted for the month of August to £6,415, equal to 3.530s. per ton milled.

New State Areas.

Preliminary operations were commenced in March last, and since then considerable progress has been made with the erection of buildings and plant. Although it was impossible to import plant from overseas, every effort was made to instal permanent equipment wherever possible. Wooden headgears have been designed of a sufficient height and structure as will render them permanent, and the hoisting engines, which have been purchased locally, are also suitable for the permanent installation. The permanent sinking equipment is nearing completion, and a start has been made in sinking the two shafts, which had reached a depth of 105 feet and 103 feet respectively at 31st October. It is expected that the reef will be intersected at a depth of from 3,700 feet to 3,800 feet, and sinking will be carried out as expeditiously as possible. The excellent results obtained by the mines immediately adjoining this property indicate that this area will prove a highly valuable mining proposition.

Ginsberg, New Unified Main Reef and New Primrose Gold Mining Cos.

These smaller mines continued to work throughout the year under the adverse conditions prevailing, which had a marked effect on their profits. It is hoped that they will continue to earn profits for some time to come.

Glencairn Main Reef.

Shareholders have been advised that it has become necessary, owing to the exhaustion of payable ore, to cease mining and milling operations. A large quantity of accumulated slime remains to be treated, from which it is hoped to secure a fair profit.

Appreciation of Staff.

To the members of our staff both in Johannesburg and London, who have worked so loyally for us during the past year, I would wish, on behalf of the board of directors, to tender our sincere thanks; and also our high appreciation of

the devotion to duty of those members of the staff and employees of our group of mines who joined up for active service.

Since the date of our last meeting we have, I regret to say, suffered the loss of one of our auditors, Mr. Henry Hains. Mr. Hains was one of the oldest servants of the company, and his many good qualities endeared him to all with whom he was brought in contact. In terms of Clause 127 of the company's articles of association, your board appointed Mr. W. Fergusson, for many years our accountant in Johannesburg, to fill the vacancy.

Measurable Distance of Peace.

Gentlemen, before I resume my seat there is one further subject to which I must refer—a subject which I know is uppermost in all our thoughts to-day; a subject of such magnitude and recent happening that it is almost impossible for us at present to realise its vast potentialities. Armistices have been signed with our enemies, and we are within measurable distance of peace. Our only feeling for the moment is one of deep gratitude and profound thanksgiving. But in our hour of victory and rejoicing let us not forget those who have given of their best and dearest to enable us to attain the end we set ourselves out to achieve. To many life can never be what it was before, but they can at least feel that their sacrifices have not been in vain. We look back with awe and horror on the past four years of destruction, and we now have to face the enormous task of reconstruction. I feel I cannot do better than here quote to you from a speech the Minister of Railways (the Hon. Mr. Burton) recently made at Capetown: "We have a great country with great possibilities and a most glorious and interesting future. That future depends entirely on ourselves. What we want for the successful development of our great resources is national unity, and I pray that the end of the war may bring about that unity, so as to secure that happy and glorious future to which South Africa is entitled."

Gentlemen, I am sure that we all cordially endorse these sentiments, and I devoutly pray that now hostilities have ceased in Europe political strife may cease in South Africa, so that we may all work together in unity with one single purpose in view—the welfare and prosperity of the land we live in. Gentlemen, I now beg to move that the report and accounts as submitted be adopted.

Mr. Imroth seconded the motion, which was carried unanimously.

The retiring directors, Sir Robert Llewellyn, Messrs. C. Marx, J. Munro and H. A. Rogers, were re-elected on the motion of Mr. Aburrow, seconded by Mr. Pemberton.

Messrs. W. Fergusson and S. Thomson, the auditors of the company in Johannesburg, and Messrs. Chatteris, Nicols and Co., auditors in London, were reappointed on the motion of Mr. Richardson, seconded by Mr. Hilner.

Thanks to the Chairman.

Mr. Lace said he wished to propose a very hearty vote of thanks to the chairman for the very able, lucid, concise and at the same time comprehensive manner in which he had placed before the shareholders the business of the year under review. He was quite sure the results achieved during a period of great stress and difficulties must be eminently gratifying to every shareholder in the company. Now that peace was within sight it was only reasonable to think that the company was going to participate in the progress and success which must come about after such a war as they had gone through. (Applause.)

The motion was carried with acclamation, and the chairman acknowledged the compliment.

LACE PROPS, LTD.

The twelfth ordinary general meeting of shareholders of the Lace Proprietary Mines, Ltd., was held in the board room, Trust Buildings, on Nov. 22, Mr. J. Dale Lace presiding over a large attendance. Among those present and represented by proxy were:—Sir Abe Bailey, K.C.M.G., M.L.A., Messrs. Alfred Barker, J. S. Brown, D. R. Christie, Llewellyn Edwards, R. Hedding, E. M. Hind, A. B. E. Johnson, E. H. Lamb, E. Molyneux, W. Nelson, D. O'Regan, G. B. Pascoe, Bailey Southwell, Julius Jeppe, W. Ross, and O. F. Brotherton, secretary, representing in all 71,362 shares out of a total issued capital of 129,850 shares.

In moving the adoption of the report and balance-sheet, the Chairman said:—Gentlemen,—The directors' report and balance-sheet are before you. The accounts are made up to August 31st, 1918. Since that date considerable changes have taken place in our affairs, but, as those changes did not take effect until after the closing of our books on the date mentioned, they are not reflected in the accounts now submitted for your consideration. The capital account, comprising £255,000 issued shares now appears as fully-paid and the £45,000 reserve shares stand as before. The only other important change in the accounts as submitted is in the two items: Spaarwater Mineral Rights (on the credit side), £143,707 and Sundry creditors (on the debit side), £142,138. These two items are intimately associated, as will presently appear.

Much of what I have to say is known to those present here to-day, but as I have to speak for the information of the larger body of our shareholders who cannot be with us, you will pardon me if I deal with the present position at some length.

At our last ordinary general meeting on November 23, 1917, I informed you that we were still waiting for that amendment in the Gold Law which would enable us to obtain the necessary capital for the exploitation of the valuable Far East Rand properties held by you at that date, and which, as you will gather from the directors' report, you still hold.

You know that for years past your directors have striven to get that amendment in the Gold Law, and, you also know that until the present year, our exertions were without avail. But in the last Session of Parliament our efforts were crowned with success, and Act No. 30 of 1918, the Mining Leases Amendment Act, was placed upon the Statute Book.

An Instantaneous Result.

The result of the promulgation of that Act, in so far as it affected the fortunes of this company, was instantaneous. We were able to conclude negotiations which had been long previously in progress, and on August 6th last you were called together in extraordinary general meeting to consider certain proposals. These you adopted, and in a subsequent meeting on August 28th their adoption was ratified by you without a dissenting voice.

I will now briefly refer to the reconstruction of our company, which the new law enabled us to effect, and which you accepted at our meetings of August 6th and 28th last. Our nominal capital was £300,000, of which was issued £255,000, with reserve shares, 45,000. The reserve shares, £45,000, were cancelled, and for the £255,000 issued shares, an issue of £127,500 new shares has been

created, giving shareholders one new share for every two shares previously held.

Then, for initial working capital we create a new issue of shares, £127,500, which are being offered at par (20s. per share) up to December 5th, 1918, to all shareholders registered as such on July 31st, 1918. We further create an additional issue of £127,500, which will be offered at 22s. 6d. per share during a period which is to be fixed, and which shall expire on September 5th, 1919, to all shareholders registered at a date which will be determined by your Board.

These two issues will produce cash as follows:—First working capital issue 127,500 shares at par, £127,500; second working capital issue, 127,500 shares at 22s. 6d., £143,437. Total, £270,937.

The two working capital issues are guaranteed and, I am pleased to be able to state that the guarantors think so highly of the mining prospects of your properties, that your Board were able to arrange that the remuneration of the guarantors should take the form of options over further issues of working capital shares. These options are as follows:—For three and a half years from September 5th, 1918, at 22s. 6d. per share, £510,000; for five and half years from September 5th, 1918, at 27s. 6d. per share, £607,500.

On the exercise of those options, the capital issues of your company will stand thus:—First issue, in lieu of the old shares, £127,500; second issue, working capital, at par, £127,500; third issue, working capital, at 22s. 6d., £127,500. (The second and third issues are guaranteed, as I have stated). Fourth issue, working capital, at 22s. 6d., £510,000; fifth issue, working capital, at 27s. 6d., £607,500—£1,500,000, of which the working capital shares would produce £1,680,000 in cash, which should be ample provision for the working requirements of the company.

At the special meeting of 6th August, I informed you that your directors had acquired the mining rights over three farms:—Spaarwater A., in extent 1,906 morgen; Spaarwater B., in extent 1,906 morgen; Spaarwater remainder in extent 1,906 morgen (a total of 5,718 morgen or 12,107 English acres—or in claim extent equal to 8,262 claims). The total cost of this acquisition was covered by a sum of £143,707 as set forth in the balance sheet. I also stated that arrangements were being made for the flotation of these Spaarwater interests as a separate company. That flotation, gentlemen, is now an accomplished fact, all negotiations having been completed, and the new company is now in process of registration by this company's solicitors. The position as it stands is this, that this company has sold the Spaarwater mining rights to the Spaarwater Gold Mining Company, Limited, for 300,000 fully paid £1 shares in the latter company, out of which we have to account for 48,000 shares leaving to this company in their own right 252,000 shares. The initial working capital of the company will be £400,000, which will be provided thus. There will be created and offered for subscription at par shares £200,000 and within two years there will be created shares, £200,000, which will be offered at par to the subscribers of the first £200,000.

Guaranteed Issues.

These two issues are guaranteed. The guarantors in this case, as also in that of the cash issues of the Lace

Proprietary Mines are Messrs. Barnato Brothers and Sir Abe Bailey, acting for themselves and other parties interested. As I have already told you, this company hold in their own right Spaarwater shares, £252,000, those shares having cost the Lace Co. £143,707. There, therefore, remains a net profit to the Lace Company of shares, £108,293. Now, I may point out that since the working capital shares £400,000 of the Spaarwater Company are guaranteed at par, we are entitled to assume that our £252,000 shares are also worth par at least. Your directors are highly satisfied with the transaction, and they have no doubt that you as shareholders of the Lace Proprietary Company will take a similar view.

In consideration of the guarantees of the £400,000 cash working capital of the Spaarwater Company, the guarantors receive the following options over further new Spaarwater shares, which will be created as and when required for the purposes of that company: For 4 years, at par, shares, £500,000; for 6 years, at 22s. 6d., shares, £500,000. These options run from the date of registration of the Spaarwater Company. When these transactions are complete, the total issued capital of the Spaarwater Company will be £1,700,000, of which the cash provision for working capital will be £1,462,500.

As you were informed at the special meeting of the 6th August, 1918, the Lace Company borrowed the £140,000 necessary for the acquisition of the Spaarwater rights. That will explain the item in the balance sheet, sundry creditors, £142,138, and there will be no difficulty in providing for repayment of the loan when the time arrives. All these are long and dry details, but it is necessary to set them forth clearly for the benefit of distant shareholders. I will now refer to the mining aspects of your properties.

The Vlakfontein Farm (freehold) is bounded on the north by the Mynpachts and leased areas of the Springs Mines, Limited, and the Anglo-American Corporation. The great value of the areas now being so successfully worked by these good neighbours of ours are too well known to require any eulogy from me, and I have no reason to doubt that in our mining operations we shall be equally successful in finding good values at a very reasonable depth.

It is not improbable that at no distant date you may be called together to discuss a proposal in reference to the farm Droogfontein, in the neighbourhood of which important mining work is proceeding. It would not be in your interests that I should say more than that at this juncture.

Spaarwater G.M. Co., Ltd.

Vlakfontein and Spaarwater have a beacon common to both, the northern beacon of Spaarwater being the southern beacon of Vlakfontein. The Spaarwater farms are bounded on the south-east by the property now being worked, with very profitable results, by the Sub Nigel Company, and on the north-east by the farm Grootfontein, the property of the Corner House and the Consolidated Gold Fields of South Africa, Ltd. The map of the Far East Rand, which accompanied our report for 1916, sets forth very clearly the position of our properties and interests. Whatever I may have said in the past as to the value of our enormous assets in the Far East Rand, those interests have to-day been largely increased by virtue of our acquisition of the interest in Spaarwater, and further by the fact as we

have shown you that we have been able to find the necessary money on fair and reasonable terms for the exploitation and development of those interests.

You will understand that the administration of our company and the Spaarwater Company and the control of the exploitation of their very valuable properties must pass into the hands of those who are providing and guaranteeing their basic finance. Both the Lace Proprietary Company and the Spaarwater Company will be administered by the house of Barnatos. This will be as satisfactory to you as it is to your present directors, recognising as we do and must that the Barnato firm has a reputation well and worthily earned for thorough efficiency, fairness, consideration to workers, and conscientious care for the interests of shareholders. The directorate of this company will be slightly changed, and we shall, of course, be represented on the board of the Spaarwater Company.

Gold Law Amendment.

There is no doubt in my mind that without an amendment of the Gold Law of 1903 (which was one of the most unjust and inequitable laws ever enacted), the owners of mining properties, the individual, or company in common, never would have had a possible chance of any reward for their industry. And so you had the stoppage of all enterprise in the Far East Rand. With the passing of the Gold Law Amendment Act, all that was entirely changed, and the effect of same is reflected particularly in that which we have attained, and what has been done by this company may be done by other companies with a Government anxious to see the development of the Far East Rand under fair and reasonable conditions, and with this year's enabling Bill to which I have referred.

I feel that the future of your company is now fully assured, and your thanks are due in the fullest measure to the tenacity, push and endurance of your directors who, in season and out of season, never ceased to fight for your company's rights.

To-day we stand in a very first position to deal with our own affairs and with any other business that comes along—and it can fairly be said of the Lace Proprietary Company to-day that we are a real and live concern.

The policy of your board, every individual of it, is to push to the finest advantage the enormous interests we hold. Very much has been done this year already in spite of almost supreme difficulties, war conditions, difficulty of communication, but more can yet be done, and I can promise you this, that no unnecessary time will be lost in getting to active operations, for which the means have now been provided.

With the coming of peace there is the coming of certain prosperity. I am an optimist and I thank God for it, for the pessimists in a country such as ours are of no use. You will find your pessimist generally a bilious and decrepit old gentleman or perhaps more often a disappointed office-seeker—a past-participle of a past manhood—no good to himself or to anybody else, and I am sorry to say we have a few of these in Johannesburg. For success you must believe in yourselves, as our great heroes have done in France. That is the spirit of true Britishers."

Concluding, Mr. Lace said: "And ever upon the top-mast height the banner of England blew." Thanks be to God and our soldier boys, and may it blow there for ever and the day after, for it is our flag, and it is our day to-day.

"I now beg to move that the report and balance sheet be adopted."

Mr. W. Ross, in seconding the adoption of the report, congratulated Mr. Lacey on his forethought in acquiring the farms referred to. He hoped Mr. Lacey and the company would derive the great benefit which they were all looking forward to.

Mr. Julius Jeppe supported Mr. Ross, although there were certain points in Mr. Lacey's speech which he did not agree with. Mr. Lacey had said that the directors had fought day and night for the passage of the Mining Leases Amendment Act, but with usual modesty, Mr. Lacey had omitted to say that it was really he (Mr. Lacey) who had done a tremendous amount of work in the matter, and had inspired others by his example. Many were the Board meetings at which the question had been fully discussed, and the manner in which Mr. Lacey had fought and worked at those peaceful meetings, would always be remembered. No doubt Mr. Lacey deserved the sincerest thanks of the shareholders. (Hear, hear.)

The report and balance sheet were agreed to.

The retiring directors: Messrs. J. Dale Lacey and B. Southwell were re-elected, and Messrs. Page and Fry were re-elected as the company's auditors.

This concluded the business.

CONSOLIDATED MAIN REEF.

NATIVE LABOUR POSITION.

The 20th ordinary general meeting of shareholders of the Consolidated Main Reef Mines and Estate, Ltd., was held on Nov. 28 in the board room, Corner House. Mr. M. Honnet presided.

In moving the adoption of the report and accounts, the Chairman said:—A very complete record of the company's work for the last financial year is contained in the various reports and audited accounts circulated to shareholders some time ago. In terms of the amalgamation agreements passed last year, the operations of the two companies were merged as at the 1st of October, 1917; the records of this company for the period under review, therefore, comprise 12 months work of the Consolidated Main Reef and nine months' work of the Main Reef West. This fact makes comparison with the records of the previous financial year of the two companies a little difficult. Moreover, the circumstances in many respects having been so dissimilar in the two periods, a common basis of comparison is not easily established. I shall, therefore, confine myself to a short review of the actual results achieved and the principal features affecting them. Our gross profit for the year amounted to £152,613 13s. 7d. To this sum must be added the net value of cash and cash assets taken over from the main reef west, £43,240 7s. 11d., and certain other small items amounting to £499 15s. 1d. The balance brought forward from the previous year was £99,736 6s. 11d. These items total £296,090 3s. 6d., which sum has been dealt with as follows:—We paid Government taxes £22,217 8s. 8d., and distributed dividends aggregating £101,084 4s. 6d.; capital expenditure absorbed £4,541 5s. 3d., while main reef west liquidation expenses and bearer share warrants written off accounted for further £1,482 5s. 8d.; leaving a balance of

£166,764 19s. 7d., to be carried forward to the current year's accounts. The greater portion of this balance of appropriation account, i.e., £118,459 6s. 4d., it should be noted, is not available in the form of cash, being invested in shares, etc., £8,574 18s. 4d., stores and materials, etc., £98,678 1s. 5d., sundry debtors, etc., £11,206 6s. 7d., leaving the cash and investments, after allowing for liabilities, at £48,305 13s. 3d. The war having terminated, it is hoped from now onwards to make a considerable reduction in the large amount of money locked up in stores. In connection with the balance-sheet, as now drawn to show the incorporation of the Main Reef West, Ltd., you will notice that the 323,233 shares issued to the Main Reef West are shown under capital account at £323,233, increasing the issued capital to £1,247,602. Against this figure of £323,233, property and assets are charged with £279,977 12s. 1d., being the difference between the net amount of cash and cash assets taken over (£43,240 7s. 11d.) and the face value of the shares issued to the Main Reef West, Ltd. The only other items in the balance-sheet, which perhaps call for remark are, first, "Mine Development Suspense Account," to which I shall refer later, and, second, "Main Reef East and Main Reef Deep Shareholders' unpaid calls," which represent arrears upon partly-paid shares of the old companies named, and have appeared in our accounts for some years past. These calls are not likely to be recovered from the shareholders concerned, and if possible we shall eliminate the two items from our accounts during the current year.

Review of Operations.

Turning now to the mining operations, the average recovery value for the year, 28s. 2d., is satisfactory, and the tonnage crushed 539,760 tons (including only nine months of Main Reef West milling) is also well up to the capacity of the combined reduction plants. For the comparatively large tonnage treated, however, the costs at 22s. 7d. are high; this, as the consulting engineer points out, is principally due to the further heavy increases in the prices of stores and materials, which in June, 1918, involved us in an additional expenditure, as compared with June, 1914, of £7,850 per month, equivalent to about £94,000 per annum. What this means to shareholders will be clear when it is realised that the additional burden on account of this item alone on the above basis represents a dividend of 7½ per cent. on our capital. The prices of materials have risen still further since June last. I need not refer in detail to the several other items that have contributed to the increase of working costs, such as active service allowances, holiday pay, war bonus, increases in white and native labour wages, etc., etc., as their adverse influence must be apparent. At the same time I should point out to you that though the working costs were high for the reasons already given, they would have been still higher had we been able to do all the development work that we wished to do and that is considered necessary to maintain the ore reserve position of the mine. During the financial year 1916-1917 the Consolidated Main Reef accomplished 14,493 feet of development work and the Main Reef West 13,355 feet, or a total of 27,848 feet; during the year 1917-1918 the total footage accomplished by the combined properties had fallen to the low figure of 13,530 feet, showing the serious decrease of 14,318 feet. The deficiency

in this respect is an unfavourable feature of the past year's work, and indeed is one that has an important bearing upon the future of the mine. It is only fair to the management to say that this set-back in the development position is due to circumstances quite beyond their control. In the first place, shortage of native labour for the greater portion of the year was partly responsible for curtailment of development work; secondly, the heavy floods early in 1918, from which we suffered very seriously, completely shut us out of the deeper parts of the mine, where the bulk of our development operations are proceeding; and thirdly, the breakdown of the main winding engine at No. 3 Deep Level Shaft caused the stoppage of development work in that important section of the mine for a period of three months. In addition, these successive mishaps, as you may imagine, were responsible for general disorganisation of our work, as well as extra expense. To compensate in a measure for the shortfall in development last year, a "Development Suspense Account" was created, to which appropriations from the monthly profits were placed from time to time. At the 30th June the amounts so set aside totalled £4,033 12s. 6d., which amount is shown as a liability in the balance sheet, being definitely earmarked to be spent upon development to replace the deficiency as far as possible. At this date, I may add, the account is in credit to the extent of £7,033. The ore reserves at the 30th June amounted to 1,425,870 tons of a value of 7.3 dwts. over 53 inches. Mr. Cliffrd, in his report, characterises the reserve position as fairly satisfactory and emphasises the importance to the future of the mine of carrying on development and shaft sinking with the utmost speed. Crushing at the rate of, say, 50,000 tons per month, this reserve in itself will last for somewhat over two years from the 30th June last. The wisdom of maintaining ore reserves well ahead of the requirements of the mill is obvious, and I need hardly assure you that the management, as well as the Board, are fully alive to the situation and are making every effort to at least maintain, and if possible increase, the existing margin on the development position. The greatest handicap we have to contend with is the periodical shortage of native labour. Just now the supply is extremely bad, our underground force a week ago being as low as 58.7 per cent. of our complement. The influenza epidemic is of course primarily responsible for the abnormal wastage in our case and for the insignificant number of natives coming forward for work on the mines at present. It is not possible to say when the supply will become normal again.

An Important Step.

One important step we have taken towards strengthening our development position is the recent conclusion of an agreement with the Bantjes Consolidated Mines, Ltd., whereby we have obtained the right to mine certain 26 of their claims adjoining our boundary which are inaccessible to their own workings. The principal terms and conditions of this agreement were given in the last quarterly report issued to shareholders, and I need only recapitulate here that we have secured the right to mine the claims, paying a royalty of 1s. 6d. per ton sent to our crusher station, and doing certain driving for the Bantjes Company outside the area of the leased ground, at the entire cost of that company, we also having the right to abandon the lease on giving one month's notice. Extensions of

our drives from the 7th level down to the 13th level, which are adjacent to the common boundary, can be made into the leased area immediately, and consequently facilities are at hand for rapid development of a large compact block of claims, which we have reasonable ground for assuming will not only yield fair profits, but, what is more important, will provide a large tonnage, conveniently close to our No. 5 shaft, from which to supply the mill, thus conserving our existing ore reserves during the period that development is being pushed energetically elsewhere in our own mine. If we have any luck at all with the values and percentage of payability in this ground—concerning which, as I have indicated, we are very hopeful—we shall recover much of the ground lost on our development position, owing to the rapidity with which the whole area can be developed. On the other hand, if the area proves to be unpayable we can abandon it at short notice and we will have lost very little money over it. I must refer to one other matter in connection with the property, and that is the reorganisation scheme mentioned in the consulting engineer's report. The idea is to operate the whole mine by means of two main outlets only, namely, the No. 3 deep level shaft (main reef section) and the No. 5 shaft (main reef west section), and to abandon No. 2 shaft and the vertical portion of No. 4 shaft as soon as the ore in their vicinity has been worked out. The programme involves the establishment of two main haulage ways, one on the 15th level, between the Nos. 4 and 5 inclines, and the other on the 24th level, between the Nos. 2 and 3 inclines, and when completed the scheme will result in more economical and efficient working, as two old shafts will be laid off and greater

concentration of labour will be possible. In addition, certain alterations to the surface works are necessary in connection with this scheme, and owing to the increasing depths of the workings further pumping and hoisting equipment—quite apart from the reorganisation scheme—will also have to be installed. The work and the expenditure thereon will be spread over the next two years. Owing to the uncertainty as to whether and when the requisite plant can be obtained and also as to prices, our engineers have not been able to give us a definite estimate of cost as yet, but it is believed that the whole programme, i.e., the reorganisation scheme mentioned and the new equipment necessitated by the increasing depth of the mine—can be carried out for an expenditure of £100,000 or thereabouts. The work is already in progress. A preliminary estimate of the expenditure to be incurred between now and the end of June, 1919, places the total at about £41,000, though it is probable that payment for some of the larger items of plant will not be made until a later date. At the end of October the company had £71,510 cash on hand.

Scarcity of Native Labour.

For the first four months of the current financial year our profits have declined from £11,092 in July to £8,183 in October, and for the present month I regret to say they will probably be a good deal lower. The grade of the ore milled having remained practically up to the satisfactory average of the previous year, the decline in profits is directly due to the heavy decrease in tonnage milled, which from 57,140 tons in July fell to 46,310 tons in October, resulting in an increase in the working costs of 3s. 7d. per ton milled, being 22s. 4d. in July and 25s. 11d. in October. During the

whole period we have suffered from scarcity of native labour; our force has fallen from 5,062 at the end of June to 4,494 at the end of October, showing a loss of 568 boys. On the 20th of this month we had on the property only 4,259 boys, our total complement being 6,793. Apart from this acute shortage of labour, operations at the mine were very much disorganised by the prevalence of Spanish influenza amongst both white and coloured employes during the months of September and October, and even now, though happily to a lesser degree, our work is still being retarded by the effects of this disease. We can only hope that matters will soon take a turn for the better as regards the supply of native labour, but those who are best able to judge speak none too hopefully of the prospects for the immediate future. With the existing inadequate supply of labour it will not be possible to maintain the desired scale of operations throughout the mine, and it may shortly become necessary to suspend work temporarily in that section of the mine served by No. 4 shaft. You will have realised that our officials have been through a very trying period, and you will therefore, I know, endorse an expression of appreciation of the excellent services rendered by Mr. Clifford, the consulting engineer; Mr. Healey, the general manager, and the staff at the mine. Amongst the latter we have to record with much regret the death of Sergeant S. R. Rogers on active service. Since the close of the financial years Messrs. John Munro and W. P. Fisher, lately directors of the Main Reef West, have joined the board of your company, Messrs. F. R. Lynch and A. F. Mullins having resigned.

Retiring directors were re-elected.

Messrs. Alex. Aiken and Carter and Ferryman and Goldby were reappointed auditors.

The chairman remarked with regret that Mr. Ferryman had been killed on active service.

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Notes and News.

According to the cables, Sir Lionel Phillips, in his report as Controller of the Department for the **Mineral Resources:** Development of the Mineral Resources **Sir L. Phillips's** of the United Kingdom, recommends **Recommendations.** that the Government concern itself more actively than hitherto in mining and mineral industries at Home and in the Crown Colonies and Dependencies. He also recommends the organisation of a Mines Department for the United Kingdom, and the appointment of an Imperial Resources Bureau to form a link with the self-governing Dominions. It is noteworthy in this connection that Sir Lionel Phillips has become a foundation director of the British Metals Corporation, which has a capital of five millions sterling. A representative from the Treasury is joining the board of the company, the principal objects of which will include the development of the Empire's minerals and metal production.

* * * *

In March last, the Empire Finance Corporation, Ltd., London, acquired the controlling interest in the **Marievale Nigel Gold Mines.** Estate, Ltd., and Messrs. W. H. Dawe, J. Emrys Evans, C.M.G., and W. H. B.

Frank, who represent the "Neumann interest" on the board of directors, have in consequence resigned, and Mr. J. Morisse has also resigned the secretaryship. Messrs. A. Mackie Niven, Gustav Sonn and Chas. M. Neustetel have been appointed directors of the company to represent the new control, with Mr. F. J. Slaven as secretary. Partly owing to the irregularity of the mail service there has been some delay in the re-arrangement of the board and secretaryship. The head offices of the company are now at 159-160, Stock Exchange Buildings, Johannesburg.

* * * *

The death occurred suddenly on Wednesday through heart failure following influenza of Mr. **The Late Benjamin Palmer Carter,** manager of **Mr. Palmer Carter.** the Robinson Gold Mine. Mr. Carter was on duty the previous day, and his sudden end will come as a shock to his large circle of friends and acquaintances. It seems that he was playing with his children shortly before the seizure took place. Medical aid was summoned immediately it was realised that he was in danger, but proved unavailing. The late Mr. Carter was born in New York in 1872, and came to the Transvaal in 1895. During his career on the Rand he had been connected with many mines, including the Crown Deep, Langlaagte Deep, Ferreira Deep, and finally the Robinson. The funeral took place on Friday, and was attended by a large and representative gathering of mining men.

* * * *

The thanks of the whole community are due to Mr. Dale Lace for reviving the proposal to hold a **The "Tombola"** "tombola" in aid of the Governor-General's Fund. Mr. J. Dale Lace, in his letter to *The Star* suggesting a big "tombola," or lottery, or sweep, says: "What is first wanted, it seems to me, is a small Private Bill in Parliament authorising a sweep for the Governor-General's Fund for a period of, say, two years, to meet an absolute necessity, and to allow us to get into our stride, and renewable thereafter, if the necessities require it, for a further period. I would be proud to pay the costs of such a Bill, and I will undertake to fight it through Parliament. I will find a man in the House of Assembly to handle it. I challenge the men and women for it, or against it, to declare themselves. The time for talking is passing quickly. The coming Parliamentary session will be a short session, and the opportunity, if neglected, may soon be gone for ever. It would be a non-party Bill, and would find support from every quarter of the House, particularly in view of the fact that our Government are impotent to-day to make provision for those of our brave men soon returning home, by reason of dissensions among the backvelders. I am sure the Government must recognise,

and do recognise, that the responsibilities are its own. Does not the end, then, justify the means?" Many years ago this paper wrote strongly in favour of a State lottery, and Mr. Dale Lace, we believe, can rely on the support of almost the whole community for his timely proposal.

* * * *

Referring to the circular issued to South African shareholders of the Geduld Company on the 15th October last, the secretary states that cable advice has now been received that the Imperial Treasury and the French Minister of Finance have granted permission for new shares in the above issue to be offered to shareholders resident in British and French territory respectively. The offer to shareholders in British territory is being made by circular and notice issued from the London office of the company, on the 25th ultimo, the lists closing on the 11th instant. Particulars have not yet been received as to when the offer is to be made to shareholders resident in French territory.

* * * *

The statistics of the Mines Department of the mineral output of the Union for October show a decrease in value of over half-a-million pounds compared with September, the total for October being £3,480,730, and for September £4,010,085. The gold output, including 32 ozs. from Natal, was valued at £2,903,011, a decrease of £104,434. The diamond output for October was 110,982 carats, valued at £265,958, the decrease being valued at £365,735. The coal output also reflects the ravages of the epidemic, the decrease being 127,993 tons, representing in cash £45,499. The total output was 668,811 tons, valued at £216,917, to which the Transvaal contributed 434,314 tons, a decrease of 74,450 tons; the Cape only 142 tons, a drop of 175; Free State 55,442 tons, a fall of 12,339; and Natal 178,913, a decrease of 41,029. The coal output for October, 1917, was 911,308 tons. Sales and shipments of copper last month amounted to 752 tons, and of tin to 75 tons, while there were 68,420 ozs. of silver produced, which had a value of £13,684. There were 31,504 whites and 255,379 coloureds engaged in mining throughout the Union in October, the former being a decrease of 911, and the latter of 14,771.

* * * *

The following is a summary of the operations of the Knights Deep Company for the quarter ended 31st October, 1918:—The development footage accomplished during the quarter amounted to 2,180 feet, the footage sampled being as follows:—Main Reef: Footage sampled, 865 ft.; reef width, 36 in.; reef value, 5.73 dwts. South Reef: Footage sampled, 900 ft.; reef width, 30 in.; reef value, 8.61 dwts. Tons milled, 245,000; loss on working (including sundry revenue), £3,228; appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc., amounted to £2,761; gold in reserve, nil. Operations were curtailed owing to minor accidents, and through serious influenza troubles. Tonnage and profits for current month will be considerably affected owing to overwind Robertson shaft resulting in considerable damage, and preventing hoisting therein for about a fortnight.

* * * *

Publication No. XI. of the South African Institute for Medical Research, just issued, is a monograph from the pen of Dr. Annie Porter, the Parasitologist to the Institute, on the intestinal parasites of natives as found on the Rand. Investigations have been made on some 375 native patients and 70 European patients, and, in addition to those *post mortem* examinations of over 100 natives. The publication is, of course, highly technical in character; but there appears to be no doubt that the work accomplished is of very great value. It is believed that this report is the first detailed account of these parasites as found among the native labouring community of the Transvaal. Not less than 56.8 per cent. of all natives examined were found to be

infected with intestinal parasites of one form or another. Altogether six different varieties of intestinal worms were detected and 11 different varieties of what are known as "protist" parasites—i.e., parasites which consist of single-celled animals. It is interesting to note that 70 per cent. of the Shangaans, 52 per cent. of the Zulus, 64 per cent. of the Basutos, 45 per cent. of the Msutus, and 54 per cent. of the Cape coloured people harboured parasites. The report includes a section which minutely describes the characters of the various parasites. This section is admirably illustrated, and should be of considerable value to South African medical men. In the section dealing with "general conclusions" the means by which infection with the various forms of intestinal parasites is brought about are described. The author observes that the numerous cases of infestation with the two commonest varieties of tapeworm, due to the use of imperfectly cooked beef or pork, "call for more attention to the proper cooking of meat and consequent destruction of the bladder-worm stages of these parasites. Further, the disposal of infected human excrement, in which tapeworm eggs may be present, should be so arranged that there is no contamination of herbage on which pigs or cattle feed. By preventing the development of the eggs into bladder-worms in pigs or cattle, the development of the tapeworm stages in man is rendered impossible, while the proper cooking of meat also aids in tapeworm eradication."

* * * *

Speaking at the recent annual meeting of the S.A. Diamond Corporation in London, Mr. B. Oppenheimer, said: "The diamond market, in which we are largely interested by virtue of our holdings in diamond properties, continues sound, and in my considered opinion, the prospects of the diamond trade are ever brightening, and we can look forward with confidence to much higher prices ruling after the war, good as these prices are to-day. My contention in this respect is based on the fact that, whereas now the world is making profits out of destructive production, there will be an enormous impetus on and for constructive work when peace comes. If we can sell our diamonds in the present turmoil, how much greater will be the demand when commercial constructive prosperity returns to the stricken world!"

* * * *

At the last annual meeting of the S.A. Institute of Electrical Engineers, Mr. A. E. du Pasquier (Member of Council), in moving a formal vote of thanks to the Hon. F. S. Malan for presenting the Institute's medals, said: "In normal times this is an honour which I am sure we should have all deeply appreciated. When we reflect, as the President has pointed out to-night, that, in addition to the onerous duties of Minister of Mines and Industries, the Hon. F. S. Malan has to perform the additional offices outlined to us to-night, I think I am not saying too much, or over-expressing the feeling of our members when I say it is a very signal honour indeed. It is also significant of the times that are ahead of us. Mr. Malan's presence here to-night is a real outward and visible sign that the importance of industry and scientific development is becoming increasingly recognised in high places. We, in a society like ours, are workers who are all deeply interested in the application of science, more particularly, perhaps, in the application of electricity to practical industrial purposes, and many of us feel the time is approaching when electricity will be the universal motive power for locomotion, for ship propulsion, and for the driving of all machinery used in industrial applications, whether reciprocating or otherwise. When I say industrial applications I include it in that huge field of agriculture embracing as it does the cultivation of sugar, of sisal, the production of vegetable oils, and so on; we look forward to a time when electricity will be more and more extensively used in metalliferous and chemical processes, such as smelting and the production of fertilisers. It seems to be the indicated means to effect conservation of that natural source of energy, coal, which is becoming so increasingly important with our ever-increasing demands. Last and not least, gentlemen, there is the application of

electricity to domestic purposes, for light and heat in our houses, bringing in its train the incalculable advantages of hygiene and labour economy, and I contemplate the time when this will not be the special luxury of the well-to-do, but will be as universal as the water supply. Gentlemen, all this is leading me up to the point I wish to make, that there is probably no body of men or no society which is more deeply and vitally interested in industrial development than electrical engineers, and I think we may all congratulate ourselves that we have holding the office of Minister of Mines and Industries at the present time a gentleman like the Hon. F. S. Malan who, by his works, and remarks this evening, has given evidence of such whole-hearted enthusiasm and interest in the objects which we all have so much at heart. Gentlemen, it is my privilege and honour to move that the thanks of this Institute be accorded the Hon. Mr. Malan for his presence among us to-night."

* * * *

An influential deputation from Pilgrims Rest, representing both the big and small mining and commercial interests of that district, visited Pretoria and Johannesburg last week, armed with strong mandates issued at a big and unanimous public meeting. The

**The Epidemic:
Pilgrims Rest
Deputation.**

resolutions, which have already appeared in the press, were strong, but not too strong in view of the circumstances which prompted them. They drew the attention of the Government to the fact: Firstly, that had steps been taken to isolate Pilgrims Rest from passenger traffic before the epidemic reached the district, and as was suggested and urged should be done, much could have been done to lessen the ravages of the disease throughout the district by enabling some sort of organisation to be built up before the onslaught, which was foreseen, actually took place. Secondly: It was pointed out that the absolute lack of machinery to cope with the large native population, to control them, and to administer their affairs, was lamentable and largely accountable for the disaster which ensued when natives in their fear and absolute lack of confidence in the administrative officers took flight and died in large numbers in their kraals and beyond help of immediate relief. Thirdly: Government were asked to enquire into all these circumstances, to study the evidence which was provided in abundance, to strengthen the discipline of the white police, and to provide adequate machinery to enable the Native Commissioner to deal with the problems which confront the district and to become an administrator instead of merely a tax collector as he now is and as he has been for many years past. The deputation pointed out the grave state of affairs obtaining throughout the district, the complete paralysis of all business, the utter lack of control of natives and lack of attention to the just and wise needs of natives, and they drew special attention to the fact that this condition was not one merely arising out of the epidemic or even of the war but had existed a long time and had been steadily growing worse, that attention had been frequently drawn thereto, and that unless something were immediately done to remedy matters worse would befall. Remedial measures were discussed, such as the increase of administrative staff, provision of telephonic connection, better discipline of police, etc. After full discussion with the various Ministers concerned, and with the Secretary for Native Affairs and Secretary for Justice, immediate help was promised, and steps have been taken to institute a full and careful enquiry with a view to further amending the position. Officials were also interviewed in Johannesburg, and it is felt that great good may result. Certainly the condition of affairs is most grave and calls for urgent attention.

Mr. D. Hawksley, who was formerly district manager in Northern Rhodesia for the Rhodesia Native Labour Bureau, has now been appointed by the board of management as acting managing director in the place of the late Mr. George Upton.

TOPICS OF THE WEEK.

INDUSTRIAL RELATIONS.

One hears it said, and said too often, that a fight between employer and employe is inevitable. I do not subscribe to that view. I do not believe that it is by any means inevitable, and I cannot imagine for a moment that we in this industrial community should be so unworthy of the sacrifices that have been made and the lessons that have been taught us. A test of strength in the adjustment of industrial relationship and in social reconstruction is surely a method, as I have said many times before, of the crudest possible character and of the most wasteful. It is true that we might arrive at that stage if there exist amongst employers and employed any appreciable body of extremists—men who in their particular section of the community have not realised the spirit of the times and the spirit of the agreements forming the basis of the progress we have so far made, and are not conscientiously and with patient endeavour trying to build up the better state of affairs that we desire. As I say, I do not believe there is any appreciable body of individuals such as I have just described, and although some probably do exist, it is for us to very definitely and conclusively submerge them.—SIR EVELYN WALLERS at Springs.

In the foregoing passage from his speech made at Springs last week, the President of the Chamber of Mines provides an admirable summary of the several public statements he has lately made on the thorny subject of the relations between employers and employed on the Rand. During the past week, as is recorded elsewhere in this issue, there has been a rerudescence of trouble at Randfontein, and there must be moments when even the bravest of optimists like Sir Evelyn Wallers must feel disheartened at these seemingly never-ending symptoms of friction. In face of such disquieting events we may, however, find some comfort in the following from the pen of the Minister of Labour in Great Britain, the Rt. Hon. G. H. Roberts, which shows how essential it is for the national welfare, particularly after the war, that capital and labour should work harmoniously together: "Throughout the war," he writes, "a splendid unity has characterised the nation. All classes and parties have co-operated in assisting the Government to prosecute the war to a successful issue. . . . The greatest possible measure of national unity is desirable at all times, but is essential in periods of great stress and trial. . . . Peace at home, then, is the great essential. In other words, the greatest service that can be rendered the country at this juncture is to work for the improvement of the relationships of employers and workers. . . . At this fateful juncture of our national history any body that exists to humanise industry by pointing out to employers and employed alike their rights, duties and responsibilities, that lays insistence on the fact that honest labour must be humanly treated and adequately remunerated, that in return for just and equitable treatment the best service should be forthcoming—such a body deserves every support in its aim to elevate all without hurting any, which makes appeal to men of faith in their country's destiny, to those who believe in wisely-ordered progress and balanced enthusiasms, for it is with these that abide the surer hope for the enduring greatness of our country and the well-being of its people as a whole." These wise and noble words may, moreover, be matched by another quotation from the peroration of Sir Evelyn Wallers' notable speech of last week. "My object," he declared, "in setting out these few points briefly (regarding the fate of Russia) was because the lesson in those great experiments must be to employers and employed throughout the world of significant value. It fixes more firmly than ever in our minds that in our efforts towards industrial reconstruction and the building up of the new social and industrial spirit there is positively no short cut. We have made great progress in this industry—more, I think, than in any other industry in the world; let us, therefore, go on with confidence and, above all, with increasing efficiency. And I finish my remarks as I began by insisting with all earnestness of which I am capable, that the way lies through constant patient endeavour to realise a common sense of duty and public service. Let us never forget that the solution of social and industrial trouble cannot be achieved by the head only, the heart must be in it too." We have rescued these fine passages from the files of the daily papers because we believe them to constitute a lasting and notable contribution to the literature of the most important question of the moment.

SUCCESSFUL START OF BRITISH DIAMOND-CUTTING INDUSTRY.

Mr. B. Oppenheimer's Big Scheme to Train Disabled Soldiers.

DIAMOND cutting is now an established success in England. In the course of his speech at the recent annual meeting of the S.A. Diamond Corporation, Mr. B. Oppenheimer said: "I personally have started a diamond-cutting factory at Brighton for disabled and legless sailors and soldiers, and have given the company the right to join in this venture at cost price when it is productive, not before. After twelve months of experimental work, I am glad to inform you that I can now state without fear of contradiction, even by the most sceptical, that the time is not far distant when I shall offer your company the participation promised; but, although the articles give the board the right to do such a business without first consulting you, the issues are so great that your directors have decided at the proper time to call a special meeting of shareholders that you may decide for yourselves whether you accept or refuse the participation which will be offered to you. I will now make a few remarks with regard to the scheme. Ninety-nine per cent. of the diamonds produced come from British Dominions; yet all this wealth was exported in the raw state of the Continent to be polished, and the wages were consequently lost to the British working man. Any number of "fairy stories" were circulated by interested parties when I started the scheme that this diamond cutting could not be learned or acquired except by long years of practice, and even then it was stated the British workman would prove incompetent. Gentlemen, I was always, long before the war, of a different opinion, but could not find adherents, as old prejudices die hard, or I should say died hard before the catastrophe brought about by Germany. When I saw what our 'contemptible little Army' could do, and when I, furthermore, saw how step by step the old formula of 'it can't be done' was swept away, and people put their shoulders to the wheel, and did what they thought was 'impossible' before, and did it well, as we all know, the old idea took hold of me again to start a diamond-cutting factory, to keep, anyhow, part of the wages in the country, but to start it with men who were broken in the war. In short, I conceived the idea that being too old myself to fight in the trenches I could oppose the enemy commercially, and could find work, and remunerative work—not charity—for men who were prepared to lay down their lives for you and for me, so that we here could live in peace. The world, to my mind, is big enough for everyone. It would be foolish to say I want to create a monopoly for cutting and polishing diamonds in England. In my attempts to establish an industry I do not intend, and never have intended, to go against our Ally, gallant Belgium. But I do say we here are entitled to do some of the work, and I maintain by doing it we are not only not competing with Belgium, but an interchange of workmen at a later date will make the industry more stable in both countries, and will not make it easy for the enemy after peace is declared to foster another industry on which he had an eager eye.

GERMANY AND THE DIAMOND TRADE.

"It is a well-known fact that before the war Germany had commenced on quite a big scale to polish diamonds, and most of these diamonds were sold to them in the raw state by Belgian and Dutch merchants, who bought more raw material in England than they manufactured. Well, gentlemen, this I aim at stopping. The raw article, or, as we term it in the trade, the rough diamond, which was traded in Germany before the war, must be manufactured in this country, and the wages must go to the British working man. I approached my friend, the Right Hon. G. N. Barnes, M.P., then Minister of Pensions, who, after most searching inquiries, encouraged me to go on with the scheme; he afterwards handed me over to his able successor, the Right Hon. John Hodge, M.P., to whom I also explained the scheme fully. Both gentlemen named are the friends of the working man, and the

outcome of our deliberations was that, as an entirely private enterprise, I would train up to 2,000 disabled men, the Ministry of Pensions merely paying the men their training allowance of 27s. 6d. per week for six months, as they do under all training schemes. I undertook to pay the men a minimum of £2 per week after six months' training, and to guarantee continuous employment for three years; and whilst I bound myself to the men, the men are not bound to me, but can leave me at a moment's notice, if they can earn higher wages elsewhere. As for various reasons all the candidates cannot be trained at Brighton, and there is a long waiting list, I am arranging centres of instruction at Cambridge, Wrexham, and Fort William, with a good chance of establishing factories in these places at a later date. This is the outline of the scheme. I am greatly indebted to the Director of Training, Major Mitchell, and to the National Service Department, the latter for granting the necessary building permission. It will interest you to learn that every bit of machinery is being made at our own workshops by disabled men, under the supervision of Dr. Beckett Burnie, the principal of the Technical College at Brighton, and my thanks are due to the Committee of the Municipal Technical College for lending him to me.

THE WAGES OF TRAINED MEN.

"At present we have trained, and have in training, 150 men, but within the next few weeks, when our new buildings are completed, we shall be able to take on 50 new men a week. Amongst those trained there is a large number whose wages have been increased from the minimum of £2 per week to £2 5s., £2 10s., £2 15s., £3, and £3 10s. respectively, and I have no doubt in my mind that most of the men will be able, within a measurable distance, to earn up to £5, and more, a week. Some of the men have shown such exceptional ability that we already allow them to teach newcomers. Every diamond turned out by the factory—that is, by the disabled men—up to date (about £200,000) has been sold, and the cutting has been found perfect by the severest critics. We have now in cutting £300,000 more; we have polished some of the finest diamonds produced by the Jagersfontein Mine, which you all know yields diamonds as fine in quality as the historic Brazilian stones of olden times. As far as wages are concerned, I am convinced, in my own mind, that we will, when we are firmly established, be able to pay the men wages which will compare favourably with the highest being earned by skilled workmen in Amsterdam. Before concluding my remarks on this proposed diamond cutting industry, I wish gratefully to acknowledge the assistance given to me by the great producers and the Diamond Syndicate, who control the rough article."

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THE YEAR WITH THE ZAAIPLAATS TINS.

Points from Annual Reports.

THE annual report of the Zaaiploats Company states that it has acquired 27½ acres in the Valley from the Transvaal Consolidated Lands. It contains, apart from any unknown ore bodies that may exist, a large quantity of high-grade alluvium. From 17,078 tons milled during the year and 5,494 tons of alluvium treated, the yield was 521 long tons concentrates besides which 25 tons were purchased. The average value was 70.5 per cent. metallic tin. Refined metal produced 735,609 lbs. There were also 112,605 lbs. tin in slags and concentrates. A number of boreholes put down gave negative results. The connecting drive between Nos. 6 and 13 sections was completed, the saving in labour and power, with the additional advantage of better efficiency has more than justified this undertaking. The working profit amounted to £65,643. Of this £19,125 was paid in dividend, £10,000 was used for the creation of a reserve fund, expenditure on fixed assets £19,205. Amount carried forward, £17,425. The total amount paid in dividends totals £358,125, equal to 595 per cent. The policy of converting the whole of the company's production of concentrates into metallic tin has been continued throughout the year. The results achieved have been eminently satisfactory; the quality of the tin produced exceeding expectations. During the year a new smelting plant was erected. The directors have seriously considered from time to time the question of purchasing concentrates from other tin mining companies for smelting purposes, but owing to the many difficulties at present connected with this class of business only 25 tons were purchased during the year. The matter is still occupying attention.

Mr. W. J. Gau, the consulting engineer, in the course of his report, says the production of high-grade ore from No. 13 section has continued very satisfactory, and extensive development of the ore body on steeply dipping fissure planes has increased the number of ore-bearing faces, by

which means it is possible to augment the output. Prospects in this section are very encouraging. Several promising sections are at present closed down due to shortage of native labour. The mine continues to be run on economical lines and working costs may be considered satisfactory.

Referring to other sections, the manager says that work in No. 5 was carried on with indifferent results. Most promising conditions exist at all times in the face, but no permanent improvement in the ore body has taken place. Development is being continued, and a small tonnage of payable ore is obtained from time to time. Flooding of No. 6 caused suspension of work, and subsequently shortage of labour prevented re-opening. Prospects although comparatively poor are by no means hopeless, and it is intended to restart work when conditions are suitable. A small pipe discovered in the connection drive between Nos. 6 and 13 has not led to the establishment of a new ore body, but the existence of a strong ring and other characteristics, coupled with the situation of the body, marks the occurrence as one of great potential value. Labour was scarce throughout the year. The payable ore reserves available for treatment are 5,780 short tons. The working expenditure totalled £50,651, equal to 59s. 4d. per ton, while the working profit of £65,643 represented 76s. 10d. per ton. The working revenue was 136s. 2d. per ton. The October profit was £2,105, the reduction being entirely due to curtailment of operations occasioned by the influenza epidemic. In the October quarter 4,748 tons were crushed for a yield of 138 tons concentrates assaying 69.8 per cent., and a profit of £17,600. The smelter produced 82 long tons of refined tin assaying 99.5 per cent. The influenza epidemic brought operations to a standstill for a fortnight. The main face in No. 13 has remained steady in extent and values. No fresh developments took place in other sections. Labour supply remains unsatisfactory.

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THE LATEST TROUBLE AT RANDFONTEIN.

Both Sides of the Case Stated.

The dismissal of the local President of the Mine Workers' Union at Randfontein has led to a strike of men at the Block "A" section. Both sides of the case are given in the following statements. The following was issued by the general management of the Randfontein Mines this week in connection with the dispute:—

"The notice in the *Rand Daily Mail* of 3rd inst. is likely to give a wrong impression on certain points. It might be as well to state again that Day was dismissed for calling the sectional manager a liar, and that there was no question of victimisation. On the morning of Day's dismissal the men voted against a strike. On the following morning a ballot was taken, and the decision was again against a strike. It was only on the Monday morning (December 2) when the men were met by six South African Mine Workers' Union officials from along the Reef that the men decided to strike. After addressing the men, a strike having been decided upon by a show of hands, the deputation interviewed the general manager. The deputation stated that unless Day was immediately reinstated the men would not go down, and they argued that no matter what Day had said to the sectional manager, Day could not be dismissed before a Board of Reference had been called for by the management. The management offered to call a Board of Reference jointly with the Mine Workers' Union, and promised to reinstate Day and pay him for time lost if the Board's finding was in Day's favour. This suggestion was refused, and the men went on strike."

THE MEN'S REPLY TO THE MANAGEMENT.

The Mine Workers' Union has issued a statement in regard to the dispute, which traverses the report of the management. The local grievance committee at the outset made the recommendation that the question of Day's dismissal should be left in the hands of the Executive Committee of the Union and on last Saturday night the officials of the Krugersdorp branch and the Grievance Committee met the Executive Council of the Mine Workers' Union. A resolution was passed empowering the Krugersdorp branch to take action and appointing six members of the Council to undertake the work of negotiation. The resolution contained an expression that it was "a fair case of victimisation, the last act in a series of fruitless attempts to get rid of Day." The deputation saw the men on Monday morning and got the following recommendation from them: "That Day should go down with us this morning and that he should be paid for the two shifts which he has lost, or we will not go down. Further, if the management feel that they have a grievance against Day, they then can call for a Board of Reference and the men will abide by the finding of this Board."

BEFORE THE TROUBLE.

The statement of the Union alleges that the management had a grievance against Day, and had been trying to get rid of him. It mentions incidents in support of this contention, and coming to the point at issue states: "Day got leave of absence from the management for the Friday and Saturday, one of which days was to attend a delegates' council meeting in Johannesburg. He took ill on the Sunday. On Monday the mine captain was informed over the phone that he was unwell and could not come to work, and that he would not come on the following day if he did not feel up to scratch. On Thursday the management phoned to the doctor to ascertain if Day was ill—a most unusual procedure for a manager. On Friday morning Day came back. He was told that somebody else was working in his place, and therefore they would not issue him his candles or gang book. Usually a shift boss or a mine captain fixes one up when one returns after absence. In this instance the sectional manager was the only man capable of doing this."

"Day Must Go Down."

After expressing dissatisfaction with the manner in which Mr. Beattie had received the deputation, and denying the statement made by Mr. Beattie that Mr. Forrester Brown had arranged with Mr. Gemmill for a Board of Reference for Saturday night, and that the executive council had turned it down, the statement proceeds: Mr. Beattie said that Day had also on the shaft, in the presence of the men, called Mr. Oxley-Oxland a liar. We asked the men if Mr. Beattie's statement was correct. They denied it. After the men had appointed their pickets, etc., on our way out Mr. Beattie held out this threat: "That we must clearly understand that when the men came back they would not take them all on again in view of the shortage of natives." This is merely a short digest of the facts of the case, and more will come out later if the management elects to call a Board of Reference on condition that during the sitting of that Board all must go down, including Day. Another misstatement of facts is that the president and secretary of the Federation had been muzzled by us. Even the Mine Workers' Union recognise certain impossibilities, and the muzzling of Archie Crawford and Forrester Brown is one of these. The actual resolution passed is this: "That before taking any definite steps in any negotiations between ourselves and the Chamber of Mines on the subject, these gentlemen refer the matter to the committee appointed to see this affair through to a successful issue."

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LATEST FROM THE "T.C.L."

Mining and Financial Activities Reviewed.—Tin Profits.

THE "T.C.L." directors' interim report for the period from 1st July to 30th September, 1918, has the following, *inter alia*:—Five farms have been sold at a satisfactory profit. Lot 236, Parktown, taken over under a mortgage bond, has been satisfactorily disposed of. Twenty-six lots in the company's various residential townships have been sold, and seven leasehold lots have been converted to freehold. In the coloured township of New Clare eleven lots were realised. The market for township lots continued good and sales were stimulated by the grant of building facilities adapted to meet the prevailing conditions. Loans amounting to £3,554 19s. 9d. have been repaid in full, and current mortgages have been reduced by £8,872 1s. 10d. New loans have been made to the extent of £15,671 3s. 2d., whereof £10,846 3s. 2d. represent building loans to purchasers of township lots. The mortgage bonds and other investments account has been further increased by £7,912 17s. 5d. in respect of balances owing on sales of property. New leases have been entered into in respect of three farms, and five farms have been sold subject to the retention by the company of the mineral rights thereof. There continues to be a steady demand for cattle grazing land. A fair crop of maize has been harvested and disposed of at satisfactory prices. The preparation of the land for the coming crop season is well in hand; good spring rains having fallen. All livestock have wintered well and are in good and growing condition. The forest plantations at Pan and Holfontein continue to make good growth, and additional plantings are being made. Water boring operations on the Saron ranching block have been discontinued for the time being, and the drilling plant has been transferred to the Rondeboschje ranching block, where further stock watering facilities are needed.

MINING.

Groenfontein Tin Mine: 1,210 tons of ore were crushed and 1,021 tons of sand residues re-treated, producing 45 long tons of 72 per cent. concentrate; 14 long tons of 73 per cent. alluvial concentrate were also produced. Estimated profit for quarter, £5,160. The year's operations show a credit balance of £10,429 as at the 30th September, exclusive of an amount of £15,000 paid by the Zaaiplaats Tin Mining Company, Ltd., for the freehold of a portion of alluvial tin-bearing ground on Groenfontein and Roo-depoort. The main working faces continue to carry average exposures of ore. Mutue Fides Tin Mine: 1,338 tons of ore were crushed, producing 60.5 long tons of 71.7 per cent. concentrate. Estimated profit for quarter, £8,570. The year's operations show a credit balance of £22,505 as at 30th September. The main working faces continue to carry average exposures of ore. Mining interests held by the company: Penge No. 780, district Lydenburg: Operations at this mine have been practically suspended by the tributors owing to shipping difficulties. Fairview (T.C.L.), Ltd.: The tributors crushed 4,450 tons, yielding 1,085 ozs. of gold, during the quarter. Rietfontein No. 1228, district Lydenburg: The tributors crushed 1,546 tons, yielding 195 ozs. gold, during the quarter from amalgam only. A roasting furnace has now been installed, enabling recovery to be made from concentrates. The mine development has yielded satisfactory values and the tributors have taken steps to increase the plant capacity. Holfontein: The third borehole was down 1,366 feet on 27th September, still in quartzite. Swaziland Tin, Ltd.: 97.5 long tons of concentrate were produced during the quarter at an estimated profit of £9,820, the total profit since the beginning of 1918 to 30th September being £38,982. Mount Morgan Mine: This mine has been let on tribute and a commencement has been made by the tributor, who has erected a roasting furnace and further plant.

New Mine Regulations.

The following additions to and alterations in the Mines Regulations are gazetted:—Regulation No. 126 (3) to be amended by the insertion, after the words "and the check surveyor," of the words "*after making an adjustment for the ground broken in the interval between the two measurements.*" Regulation No. 131 to be numbered 131 (1). Regulation No. 132 to be numbered 131 (2) and the following new Regulation No. 132 to be inserted:—132 (1) An inspector of underground contracts or other official authorized by the Government Mining Engineer who shall be a certificated mine surveyor shall at any time have the power of examining the contracts, cost sheets, and records, of checking measurements, whether disputed by contractors or not, and generally of supervising the observance of the provisions of this chapter. (2) The manager of any mine shall place at the disposal of the inspector, at any place and time required by the latter, the services of one of his certificated surveyors, together with such assistance as the inspector may consider necessary, for the purpose of carrying out any of the matters referred to in sub-section (1) of this regulation, and such surveyor, when required to do so by the inspector in terms of this regulation, shall carry out in conjunction with the inspector a joint survey in such mine, in a manner and method satisfactory to such inspector, or for the said purpose assist him in making any survey in such mine. In the case of the inspector carrying out a check survey, as provided for in sub-section (3) of this regulation, the services and assistance to be placed at his disposal as provided for above shall not include those of the surveyor who carried out the measurement in dispute. (3) In the event of a contractor being unable to obtain the services of a check surveyor as provided for in Regulation No. 125 (2), the contractor may apply to the inspector, who, if he thinks

fit, shall exercise the functions of such check surveyor in the manner and subject to the conditions specified in Regulations Nos. 125, 126, 127, 128, 129, and 130, provided that the said contractor shall deposit with the inspector the sum of ten pounds (£10) sterling, or such lesser sum as the inspector may decide. Regulation No. 158 (10) to be amended by the addition of the following sub-section:—(g) Provide and cause to be used in every crusher station and ore-sampling room appliances, such as suction fans, atomisers and sprays, which may be necessary for the effective prevention of dust arising from the operations conducted in such station or room. Regulation No. 166 to be numbered 166 (1) and to be amended by the addition of the following new sub-section:—(2) An inspector of mines, with the approval of the Government Mining Engineer, may direct that any regulation applicable to a mine included in the list of mines framed under section two of Act No. 19 of 1912, or under a provision of any law amending or substituted for that section, shall be applied to any mine not included in such list by giving written instructions to that effect to the manager of such last-mentioned mine, and such regulation shall thereupon apply to such mine. Each such regulation shall be specified in the instructions to the manager of such mine.

Swaziland Tin.

The following are the results of the operations of this company for the month of October, 1918: Concentrate recovered, 30 long tons; estimated profit (taking tin at £230 per ton), £800; less adjustments in respect of previous shipments, £552; net estimated profit, £248. Owing to the recent fall in the price of tin the value of the output is calculated at a conservative figure. Influenza is now affecting operations.

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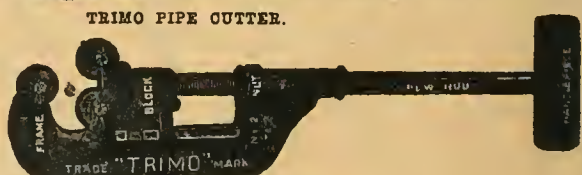
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THE WEEK IN THE SHAREMARKET.

Continued Stagnation—Diminishing Business.

At the opening on Saturday Government Areas were in demand at 92s. 3d. At the call they made a further advance to 93s. New Modders had a big recovery and Modder Easts were also the turn better; the remainder of the group came unchanged. In the small stocks Knight Centrals made another rally. The tone generally was better, but business was limited to dealings in eight stocks. The only sale put through at the opening on Monday was one of S.A. Lands at 6s. 7d. The call was dull and, with the exception of Knight Centrals, generally the turn lower. There was a larger turn-over at Tuesday's call and a further falling of prices, with the exception of some of the smaller stocks and Geduld Props. The market was almost stagnant throughout the day. The market was steady on Wednesday morning with small advances in Modder B., Modder Deep, Geduld Props. and Van Ryn Deep. Knight Centrals were again in good demand and Hume Pipes decidedly weak coming 29s. sellers after one hundred had been sold at the price. On Thursday morning Southern Van Ryns rose to 14s. and maintained the price at the call, though immediately afterwards they came sellers. The options are apparently unattractive, as they are 2d. sellers. The rest of the market was on the weak side. Knight Centrals lost 6d. of their recent gains. After the call City Deeps were offered down to 49s., the buying price being 46s. Genuine business is at a standstill. The chief controllers of the market are evidently holding their hands, and the general public is following their passive lead. Only a few outside stocks have been dealt in. The following sales were recorded: Phoenix, 1s. and 11d.; Union Tins, 5s. to 5s. 9d.; Lydenburg Lands, 2s.; Henderson's Estates, 5s.; Monteleos, 24s. to 25s. 6d.; Sakalavas, 6s.; New Farms, 21s.; Makganyene Diamonds, 20s., after having been buyers at 25s. 6d. earlier in the week. Henderson's Options were 10d. buyers.

The following alterations in prices at Friday's call show few improvements, except in Modder Deep, while the weakness in City Deep and Brakpan was accentuated. Sales: Bantjes, 2s. 3d.; City Deeps, 46s. 6d.; Daggafonteins, 24s.; Modder Easts, 19s. 6d.; New Geduld Deeps, 5s. 9d.; New Eras, 10s. 6d.; Kleinfonteins, 12s.; New Modders, £26 10s.; Pretoria Cements, 65s.; Sub Nigels, 27s. 6d.; Springs, 66s.; Alkalis, 42s. 6d.; Van Ryn Deeps, 71s.; West Springs, 23s. 6d. Buyers and sellers: Brakpans, 69s., seller; East Rands, 5s. 9d., 6s.; Government Areas, 91s. 6d., 92s.; Knights Deeps, 7s., buyer; Leenwpoorts, 26s., buyer; Lace Props, 10s. 6d., 11s.; Modder Deeps, £7 12s. 6d., £7 15s.; Modder East three-year Options, 5s. 3d.; Nourse Mines, 16s. 9d., 17s.; Rand Selections, 82s., 83s.; Rooibergs, 7s., 7s. 6d.; Southern Van Ryns, 13s., 13s. 9d.; Sub Nibel 5s. paid, 11s., 11s. 6d.; Zaaiplaats, 14s. 9d., 15s.

	Fri., 29th.	Sat., 30th.	Mon., 2nd.	Tues., 3rd.	Wed., 4th.	Thurs., 5th.
African Farms . . .	15 9*	15 9*	15 9*	15 9*	15 9*	15 11+
Ang.-Amer. Corp. . .	26 0*	27 0*	26 0*	26 0*		
Apex Mines	7 0*				7 0*	7 0*
Aurora Wests	8 0*	8 0*				
Bantjes Cons.	2 0*	2 3*	2 3*	2 4*	2 3*	2 3*
Brakpan Mines	70 0*		70 0*	70 0	67 6*	70 0+
Breyten Collieries . .		11 3*		11 3	11 6*	11 6*
Brick & Potteries . .	3 9*				3 9*	
British Sth. Africa . .						20 0
Bushveld Tins	0 9*	0 9*	0 8*	0 9*	0 8*	0 9
Cinderella Cons. . . .	5 0*		5 0*	5 0*	5 0*	
City & Suburbans . . .			7 9	7 6*	7 9*	8 6+
City Deeps	52 0+	53 0+	51 0+	50 3*	51 0+	47 6+
Clydesdale Collieries .		20 0*	20 0*	20 0*	21 0*	20 0*
Con. Investments . . .					21 0*	20 0*
Con. Langlaagtes . . .			18 0			20 0*
Con. Main Reefs	12 0*	11 9*	12 0	11 9*	11 9	11 6
Con. Mines Select. . .	25 0+			23 9*	23 9*	
Coronation Collieries .	47 6*	47 6*			46 0*	
Coronation Frees. . .	1 3*	1 3*	1 3*	1 3*	1 3*	1 3
Crown Diamonds	4 0*	4 0*		4 0*	4 0*	4 0*
Crown Mines	35 0*				45 0+	47 6+
Crown Mines Deb. . . .	£100*	£100*	£100*	£100*	£100*	
Daggafontein Mines . .	23 0*	22 9*	22 6*	22 6*	22 6*	22 6*
Do. Options	5 0*	5 0*	5 0*			
De Beers		£153*		£153*		
East Rand Coals	2 2*	2 2*	2 2*	2 2*	2 2*	2 2*
East Rand Deeps	0 10*	0 11*	0 11*		0 11*	0 11*

	Fri., 29th.	Sat., 30th.	Mon., 2nd.	Tues., 3rd.	Wed., 4th.	Thurs., 5th.
East Rand Minings . .	17 6*		17 6*	17 6*	17 6*	17 6*
East Rand Props. . . .	5 6*	5 11*	6 0	5 3*	5 6	5 6*
Eastern Golds	1 9	1 9+		1 8+	1 8+	1 8+
F. Smith Diamonds . . .	3 6*	3 7*	3 7*	3 7*	3 8	
Geduld Props.	37 0*		37 0*	37 6	38 0	37 6*
Glencairns		2 0*		2 0*	2 0*	
Glencoe Collieries . . .			6 0*	6 0*		
Glynn's Lydenburgs . .	24 0+	22 0*	22 0*	22 9*	22 6*	
Govt. Areas	91 0*	93 0	92 3*	92 6	92 3*	92 0
Hume Pipes	30 6*	31 0*			29 0	28 6*
Jhbg. Bd. Executors . .	28 6*	28 6*		26 0*		
Jupiters	4 9*	4 9*	4 9*	4 9*	4 10	4 10*
Klerksdorp Props. . . .	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Knight Centrals	5 9	6 4	6 7	6 8	7 0	6 5
Knights Deep		6 0*	6 0*	6 3*		
Langlaagte Estates . . .	13 6*	15 0*	15 0*	15 0*		
Lace Props.	12 0*	11 3	11 6*	11 3	10 9*	10 10
Leenwpoort Tins	26 9*	27 0*	27 6+	27 6+	26 3*	25 9
Luipaardsvlei Est. . . .	1 0*					
Lydenburg Farms	8 7*		8 7*	8 7	8 6	8 6*
Meyer & Charlton	90 0*	90 0*	90 0*		90 0*	90 0*
Middelvlei Est.						1 3+
Modder B.	156 0*	156 3	156 3A	154 0*	155 0*	155 0*
Modder Deep	150 0*	150 0*	149 0*	149 0*	151 0	151 0*
Modder Easts	19 6*	20 0	19 9*	19 10*	19 9*	19 6*
Do. Opts. (3 yrs.) . . .	5 8+	5 7*	5 8*	5 8*	5 6*	
Do. Opts. (4 yrs.) . . .	6 7	6 7*	6 7*	6 7*	6 7*	6 6*
Natal Nav. Colls. . . .			20 0*	20 0*	20 0*	
National Banks			£14*	£14½*	£14½*	£14½*
New Boksburgs	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
N. Eland Diamonds . . .	25 0+	25 0+			23 0	
New Era Cons.	10 0*	9 9*	10 0*	10 3	10 3	10 3*
New Geduld Deeps	5 8*	6 0+	5 8*	5 8*	5 9*	6 0+
New Heriots	12 9*	12 9*	12 9*	12 9*	12 6*	12 9*
New Kleinfonteins . . .	11 3*	11 9*	12 3	12 0*	12 0*	12 0*
New Modders	£26½*	£26½*	£26½*	£26½*	£26½*	£26½*
New States	20 0*	20 3	20 1*	20 4½	20 3*	20 3
Nigels	4 6*	4 6*	6 0+	4 6*	4 0*	6 0+
Nourse Mines		16 0*	16 0*	16 0*	16 0*	16 0*
Premier Pref.				140 0		
Pretoria Cements	68 0*	69 0+	69 6+	67 0	66 6	65 0*
Princess Estates	2 10*	2 10*	2 10*	2 9*	2 9*	3 0+
Rand Collieries	2 9*	3 0*	3 0*	3 0*	3 0*	3 0*
Rand Nucleus	1 6*	1 6*	1 6*	1 6		1 6*
Rand Select. Corp. . . .					83 0*	84 0+
Randfont. Deeps	5 3*	5 3*	5 3*	5 6	5 3*	5 3*
Randfontein Ests. . . .	15 0*		15 0*	15 0*	15 0*	15 6+
Roberts Victors	5 0*	5 0*	5 0*			
Rooibergs	8 2	8 2*	8 2*	8 0	8 0	7 9*
Roodepoort Uniteds . . .		3 0+	3 0+	3 0+		3 0+
Ryan Nigels	3 3*	3 6+	3 3*	3 6+	3 3*	3 3*
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Simmer & Jacks	6 6+	6 0+				
Simmer Deeps	2 6	2 6*	2 6*	2 9+	2 6*	2 6*
S.A. Breweries	31 0*			35 0+	33 0*	
S.A. Lands	6 5	6 6*	6 6*	6 6	6 3*	6 4*
S.A. Alkali	43 0*	44 0*	45 0*	42 0*	42 0A	42 0*
South Van Ryns	12 6*	12 6*	12 7½*	12 9	12 9*	14 0
Springs Mines	66 9	66 6*	66 0	65 6	65 9	65 9
Sub-Nigels	28 0*	28 6	28 6*	28 6	28 0*	28 0
Swaziland Tins		29 6+	30 0+			
Transvaal Lands		22 6*	22 6*	22 6*	23 0*	23 6
Trans. G.M. Estates . . .		13 0*		12 6*	13 0*	13 3*
Van Ryn Deeps	71 0*	71 0*	70 6*	71 0	71 3*	70 9*
Village Deeps	16 0*	17 0+	16 0*	16 0*		16 0*
Village Main Reefs . . .	11 0*	11 0*	11 0*	11 0*	11 0*	11 0*
Welgedachts				27 6+	27 6+	
West. Rand Estates . . .	2 0*		2 0*			
West Springs	23 3*	23 9*	23 9*	23 9	23 6*	23 6*
Do. Options	9 6*		10 0*	10 0*		
Witbank Collieries . . .	51 0*		50 0*	50 0*	52 6*	
Witwatersrands	20 0+	19 0*	19 0*	19 0*	19 0*	19 0*
Wit. Deeps	13 0	13 0*	13 3*	13 6*	14 0	14 0
Wolhuters	3 2*		3 2*		3 0*	
Zaaiplaats Tins	15 0*	15 3	15 1*	15 1*	15 3+	15 0*
Union 5 per cent.	£102+	£102	£101½*	£101½*	£102+	£102+

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PERSONAL.

The Rhodesian Chamber of Mines has to record its great regret at the death of Mr. S. H. Boright, alternate member of the Executive Committee. The Chamber also regrets to record the death of Mr. F. P. Rolfe, representative member for the Fred Mine. The death of Mr. George Upton, chairman and managing director of the R.N. Labour Bureau, is also recorded with sincere regret.

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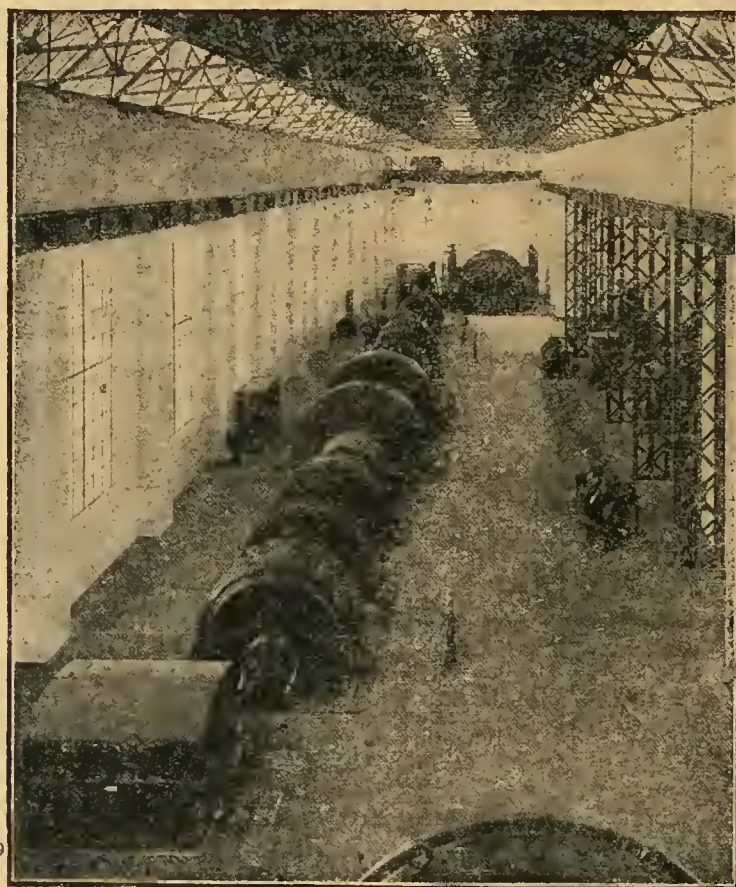
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Telegrams "WOTAN"

that the London market expects it cheaper during the next three months. Iron and steel bars have experienced a little more demand, on the turn of the month and in a measure owing to the ironmoulders having resumed work on Wednesday of this week. All prices are steadier even to firm, because the cables from Britain and America all report higher values. A representative British firm doing business in America as well, cabled to say that any of their clients wishing to cancel orders were at liberty to do so immediately, or confirm, as prices were advancing generally. The importance of values is of such significance that the following has been taken over from *The Star* of December 4th: Local builders, says the *Times of Natal*, affirm that one result of the armistice has been a tremendous fall in the price of certain building materials, the greatest drop being experienced by corrugated iron, which has fallen from £95 per ton to £45 per ton. Timber has likewise experienced a drop of about 20 per cent., while iron water piping has declined to the extent of about 33½ per cent. It is confidently anticipated that prices will decline still further, and it is pointed out that the moment hostilities ceased, war risk insurance freights dropped 25 per cent., which means that the next shipment of general merchandise from England should reflect this sympathy so far as bills of lading are concerned.

This does not in any way agree with Johannesburg values, as new iron is 1s. 11d. per foot and second-hand best 1s. 2d. This latter is in good demand, and even 1s. 3d. was paid on Monday morning. New deals are 1s. 11d. to 2s. 1d., according to length. In fact, prices in Johannesburg are steadier, but there has never been a decided drop here for new goods. The nearest approach to the Natal news was when second-hand steel plates went to £20 per ton as compared with £50 at their top values during the war.

THE TREND OF BUSINESS.

Business is picking up again after its deadly dulness for a week or so since the armistice was signed. However, so far as the Commercial Exchange and mining material are concerned, it is more of a retail proposition than any big lines. It must be borne in mind that the consumption is as great as ever, but a lot is being taken from the mine reserve stocks. The position is simmering and it is almost impossible to forecast anything until, say, a month after the armistice, therefore during next week a better opinion might be formed from the cable information. There is undoubtedly a quantity of goods on the water, and these may be sold without much profit, in the present restricted market now the mines are on their reserve stocks.

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BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 1s. 11d. to 2s. 1d.; flooring, 4½ x ½ and 6 x ½, 10½d. to 11d. per sq. ft.; ceilings, 6 x ½, 6½d. to 7d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, ½in. x 12in., 1s. 4d. per foot; 1in. x 12in., 1s. 8d.; teak, 25s. to 27s. 6d. per cubic foot; shelving, 1s. 3d.; Jarrab, 14s. 6d. cu. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 1s. 11d. to 2s. per ft.; beaver boards, 7d. to 7½d.; galvanised iron, 24-gauge, 8ft. to 10ft., 2s. to 2s. 1d.; 11ft., 2s. 2d.; 12ft., 2s. 3d.; 26-gauge, 6ft. to 8ft. 1s. 9d.; 9ft. & 10ft. 1s. 10d.; flat galvanised, 24 & 26-gauge, 95s. 100lb.; floor brads, 95s.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, atock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. 6d. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 100s. 2¼ 1-5 galls.; 10-1's; 5-6 imp. tins, 110s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ½in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2¼ I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate (Japanese), 14/6 lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 1s. 3d. to 1s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 40s. to 45s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 65s. to 70s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 46s. to 50s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ½in. and 3-16in. round iron, 95s. to 96s.; ½in. do., 85s.; ½in. steel, round, 80s.; ½in. round iron, 77s. 6d.; do. steel, 72s. 6d.; ½in. round iron, 70s.; do. steel, practically none in town; ½in. round iron, 62s. 6d. to 65s.; ½in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron, 45s. 100lb. Vereueing mild steel also 50s. per 100lb. Steel-plates, 75s. to 80s.; many sizes unobtainable. Hexagon and cuphead bolts, ½in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ½in. diameter up to 3in. long, 2s. 6d. lb.; ½in. dia., 1s. 6d.; 3½in. and up long, 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb.; ½in. dia. and 2½in. up long, 75s. per 100lb.; ½in. dia. up to 2½in. long, 1s. 6d. per lb.; ½in. diameter 2½in. and up long, 60s. per 100lb.; ½in. diameter, 2½in. and up long, 1s. per lb.; ½in. and 1in. diameter, same price as ½in. diameter; nuts, ½in., 1s. 3d. per lb.; ½in., 85s.; ½in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ½in., 1s. 6d. lb.; ½in., 75s. to 80s.; ½in., 72s. 6d.; ½in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Local Industries and Trusts.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—At a function given in honour of the Acting Prime Minister, the Hon. F. S. Malan, at Springs on the 28th instant, the Minister stated that since the signing of the armistice the Government had already instructed an advisory committee to draft a new tariff of Customs duties, for goods to be imported into the Union. From Mr. Malan's statement I take it for granted this is being done in order to foster local industries which are existent and may subsequently come into existence in this country. From the manufacturer's point of view this action of the Government will receive considerable support. I can see every local 2½d. manufacturer mirroring himself already as a millionaire trust magnate! However, from the consumers' and importers' points of view the fixing of what we may term a protective tariff can only be looked upon with mistrust and danger. In order to substantiate the latter view, I shall quote certain historical facts from the annals of the United States of America. Up to the year 1897, using the American term, that country enjoyed free trade, although trade was hardly as free as it was in the United Kingdom. What they actually did enjoy was a reasonable tariff on Customs duties, notwithstanding the fact that nearly all commodities and necessities of life were produced and manufactured in the various States of the union; but at the same time the foreign markets were available and open to the importer and consumer. This factor kept competition amongst local manufacturers keen. The cost of living was reasonable, and wages were also good. I shall now endeavour to tell your readers what happened when the Republican party, in the year 1897, returned Mr. William McKinley as President. The first thing his administration did was to place prohibitive Customs duties on all imports as a pretext that it was necessary to protect local industries. This accomplished, local manufacturers discovered that by keeping up keen competition with each other and selling their products to consumers at reasonable prices, it was not possible to amass and accumulate considerable wealth and power quickly. Trusts and trust magnates, whose money and power practically rule the whole civilised world to-day, for that opportunity have to be thankful to the McKinley Administration. No sooner did it fix the protective duties and the United States was no longer a dumping ground for exporters of other countries, than combines of local manufacturers sprang up like magic. There were no longer scores of manufacturers of any particular commodity who competed against each other by sending

round hundreds of commercial travellers all over the country to find customers. This was discontinued forthwith; all manufacturers amalgamated, and wherever anyone refused to join the combine and tried to keep out he was soon crushed. By this means hundreds of thousands of commercial men were thrown out of work. Workmen's wages were also reduced, because the next shop was not going to give employment at a higher wage, as all workshops practically came under the control of the combines and trusts. Prices of commodities went up in leaps and bounds. The consumer was made to pay through the nose: he was at the mercy of the trust magnates, and there was no remedy for the evil thus brought about by a generous and protective administration. I may state from personal experience on my last visit to the States, which took place in the years 1911 and 1912, that I found the cost of living had increased to a great extent. Where in the pre-protective days one could obtain board and lodgings at hotels for a dollar a day, or a suit of clothes for ten dollars, for the same items I had to pay as much as four and five times when I was there last. I trust, Sir, after placing all these facts before your readers, the Government of the Union will not act rashly and rush through any new legislation regarding protective Customs duties to bolster up local industries, or else the consumer of the Union of South Africa will be placed in the same predicament as the consumer of America was placed by the McKinley Administration. Thanking you for trespassing on your valuable space.—I am, etc.,

ANTI-TRUST.

Box 5843, Johannesburg.
November 29th, 1918.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"H. Gamble."—As you anticipate, we cannot, because of its libellous nature, print your attack on the good faith of *Truth*, the *Financial Times*, and the *Wit*. Deep directors.

"Senex."—Thanks for your appreciation.

"T.N.T."—Dealt with in the article in this issue.

"A.C."—(1) Yes. (2) The company is being refloated. Particulars will be announced shortly.

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LEGAL DECISIONS AFFECTING MINING.

JUDGMENT was given this week at Bloemfontein in two important Rand appeals regarding income-tax assessment. The first was that of the Commissioner of Taxes versus Booyens Estate. This was a stated case by the Income Tax Special Court under the Income Tax Acts. The Booyens Estate, Ltd., now in liquidation, was registered in the Transvaal with a capital of £40,000, divided into 40,000 £1 shares. In accordance with the objects of the company as set forth in the articles of association the company acquired 258 odd mining claims on the Witwatersrand. On the 17th July, 1906, the company sold 33 of these claims to the Village Deep, Ltd. On the 7th September, 1915, an agreement was entered into between the company with certain other parties as vendors and the trustees for a new company to be formed, to be called the "Robinson Deep, Limited," for the sale, *inter alia*, of all the mining properties of the company for 441,000 £1 shares of the Robinson Deep, Ltd. The sale was conditional on its being approved by the shareholders and upon the members of the company passing a special resolution for the voluntary liquidation of the company, and for the appointment of a liquidator to carry the agreement into effect. This was done. At no time did the company carry on any mining operations on the claims, but in 1914 the company allowed another company to sink an incline shaft through ground included in its claims, and paid this company its outlay thereupon. At the date of the sale in 1915 the assets of the company disposed of thereby stood in the books of the company at the figure of £78,598. In April, 1918, the Commissioner of Taxes made an assessment under Act 35 of 1916 on the company for the year ending 30th June, 1916, assessing the taxable income of the company at £362,402, and the tax payable as £36,240 4s. The amount of £362,402 so assessed was the difference between the figure of £78,598 and the consideration of 441,000 £1 shares received by the company for the assets sold. The

questions submitted for decision were: (1) Was the profit realised by the company on the sale of its assets to the Robinson Deep, Ltd., income of the company in terms of Section 49 of Act 28 of 1914? (2) If the profit so returned was income, was the Commissioner correct in assessing as the income accrued for the year ended 30th June, 1916, the difference between the price realised on the sale and the cost to the company of the assets sold? The Court below answered both questions in the negative.

The Appeal Court dismissed the appeal with costs, also the similar appeal heard jointly with the above case of Commissioner of Taxes v. South Deeps, Ltd., in which the facts were as follows: The respondent company had acquired the freehold of the farm Ormonde and certain claims on that farm on Booyens Estate, Mooifontein, Vierfontein and Klipriversberg. In 1905 the company disposed of portion of the farm Ormonde in consideration of the cancellation of a servitude over another portion of the farm. In 1906 it disposed of 67 claims for 287,000 £1 shares in the Turf Mines, Ltd., and sold two claims to the Village Deep for 1,924 £1 shares in that company. In the same year it disposed of 60 claims to the Rand Mines for £13,200, 60 to the New Vierfontein Mine for £12,300, and 60 to the Klipriversberg Estate and G.M. Co. for £12,900. In 1909 it disposed of the remaining extent of Ormonde and certain mining titles and claims for £41,406 in 82,812 shares of 10s. each in the Crown Mines. Out of 847 claims it had sold 730, leaving a balance of 117 claims. With regard to the latter sale, the shares received as consideration were distributed as a bonus to the shareholders. The question to be decided was whether the profit realised on the sale of all its mining properties to the Robinson Deep in 1915 constituted income. Both the questions put (the same as in the Booyens case) were answered in the negative by the Court below.

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Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—VIII.

Lessons for South Africa—The Electrification of the Italian Railways.

THE following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E. :

The motors for the freight locomotives are rated at 1,000 h.p. one hour rating, 720 h.p. continuous, and are arranged for simple cascade and parallel connection, giving efficient running speeds of 14 and 28 miles per hour respectively. The passenger locomotives are equipped with two 1,300 h.p. motors, arranged for combined cascade and pole changing control, giving four efficient speeds of 23·3, 31, 46·6 and 62 miles per hour. In each case, further speed control is effected by liquid controllers of a special type, pneumatically operated. Provision is made for efficiently circulating the liquid in these controllers, and they are further provided with an automatic device for securing constant watt input, the idea being that the acceleration of the motors should not be influenced by any variation in line voltage. The cascade and pole changing switches are contained on the motors themselves and are also pneumatically operated from the master controller in the driving cab. The whole of the control arrangements are extremely interesting, but the limits of this contribution will not permit of my dealing with them in greater detail at the moment. Although the speed control of these motors, devices for preventing irregular loading, and so on, sound rather complicated at first, in actual operating practice these locomotives are distinguished by the simplicity of control and absence of complication in the driver's cab. Details of the locomotives are as follows:—

ITALIAN STATE RAILWAYS.

	Freight.	Passengers.
Class	0-10-0	2-6-2
Length of framing	31ft. 3ins.	36ft.
Width overall	10ft. 3ins.	10ft.
Height to roof excluding trolley	13ft. 4ins.	12ft. 4ins.
Total weight in tons	60	71
Weight on driving axles	60	50
Weight on pony axles	—	21
Percentage weight on driving axles	100	70·5
Total wheel base	20ft.	27ft. 6ins.
Total coupled wheel base	20ft.	12ft.
Fixed wheel base	12ft. 7½ins.	12ft.
Diameter of driving wheels	42 ins.	64ft. 1in.
Diameter of pony wheels	—	37ft. 8ins.
Distributing voltage	3300 3-ph.	3300 3-ph.
Frequency	16⅔	16⅔
Type of motors	induction	induction
Normal operating voltage	3000/3300	3000/3300
Number of motors	2	2
Rate H.P.	1,000	1,300
Total rated H.P.	2,000	2,600
Tractive effort corresponding to one hour rating	30,800	20,900
Tractive effort at 25% adhesion	33,600	28,000
Speed corresponding to one hour rating	24·3 m.p.h.	46·6 m.p.h.
H.P. per ton one hour rating	33·4	36·6

In addition to the lines briefly described, the Savona-Ceva line and the Montenis and Simplon tunnels are operated on the same three-phase system. The five Westinghouse locomotives operating the Montenis tunnel are of the same design as just described. The 1909 Brown Boveri locomotives for the Simplon tunnel are of the 0-8-0 class, developing 1,700 h.p. at 43·5 r.p.m. At the beginning of 1915 the Westinghouse Co. had 110 of these locomotives actually in service on the Italian State Lines, out of a total of 200 locomotives of an aggregate capacity of 412,000 h.p. At this stage the Italian State Railways had already 400 kilometres of line, or 735 kilometres of single track in operation with electric traction, and had passed plans and

approved expenditure for a further 2,600 kilometres of line, this programme embracing the more important State lines and those carrying International traffic. One is justified, therefore, I think, in concluding that the three-phase system as applied to the Italian Railway electrification is an unqualified success and constitutes one of the most important railway electrifications to date. I trust it will not be considered that I have occupied too much time with this short description of the Italian State Railways electrification; my excuses are that very little has been published about it except in Italian, and the importance and magnitude of the undertaking is in consequence frequently overlooked. I am afraid, in the short time at my disposal, I have done but scant justice to it, but will now pass on to as brief as possible a description of the Norfolk and Western electrification, as one to some extent supplements the other. Unlike the Italian State Railways, many descriptions of the Norfolk and Western electrification have appeared, but almost exclusively confined to the American Technical Press. The undertaking is doubly interesting, not only on account of the magnitude of the traffic requirements, but also on account of the system adopted, commonly known as the split-phase system, the contact line being energised with single-phase power at 11,000 volts, which is utilised by three-phase induction motors on the locomotives. As far as the motor portion of the equipment went, there was therefore all the accumulated experience and data gained on the Italian lines already to hand, eliminating any possibility of uncertainty in result, and the novel feature, marking a tremendous stride, was the application of 11,000 single-phase current to the operation of the three-phase motors. Many seemingly difficult problems are essentially simple when the correct solution is found, and so it is with this phase converter. An elementary diagram is given.

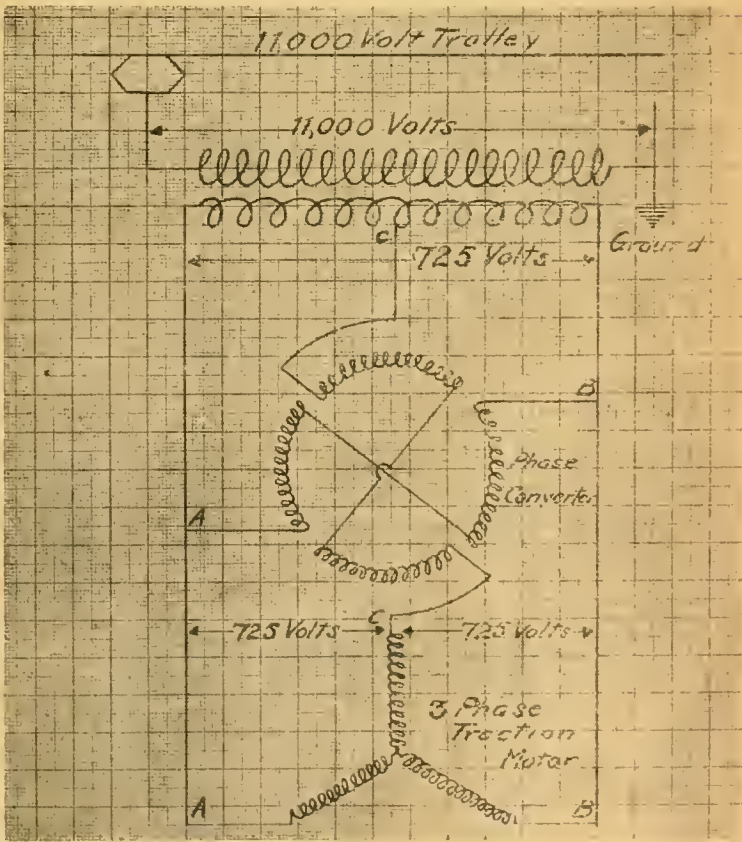


Fig. 9.—DIAGRAM OF CONNECTIONS: PHASE CONVERTER.

The phase converter operates on the principle that, if one phase of a two-phase motor is supplied with single-phase current, when the motor is running the E.M.F. induced in the open phase will have a phase difference of 90 degrees from the voltage in the other phase, and by arranging that

the E.M.F. induced in the open phase should be $\frac{\sqrt{3}}{2}$

we produce the standard conditions (Scott connection) for two-phase to three-phase transformation. The converter is practically a two phase induction motor of rather special construction, with a squirrel cage rotor. A starting motor, single-phase commutating type, is provided at one end, and the shaft is extended at the other end to carry the fan for the ventilation of the main motors. An inspection of the diagram will make it apparent that the efficiency of conversion should be quite high, and practical working results with this railway have demonstrated the entire reliability of the system. The section of the 2,050 miles of line that

the Norfolk and Western Railway Company control, selected for electrification, is that known as the Elkhorn grade in the Pocohontas division, the distance being approximately 30 miles of main line, double track, which, with the numerous sidings and delivery tracks, amounts to approximately 100 track miles. A map and profile of the section is given. The full traffic is from Vivian to Bluefield, west to east. From the profile it will be seen that there is a 1 per cent. grade from Vivian to New Forks, from New Forks to Ennis a grade of 1 to 1½ per cent., and from Ennis to the summit this increases to 2 per cent. At the summit occurs the Elkhorn tunnel, three-fifths of a mile long and single track, with a gradient of 1·6 per cent. From the eastern portal of the tunnel to Copper we have a descending grade of 2·34 per cent., from Cooper to Graham an ascending grade of 0·4 per cent., and finally, in the last section, from Graham to Bluefield, an ascending grade of 1·2 per cent. Sixty per cent. of the line is on curves, ranging from 17 to 3 degrees, and at only two points in the whole section is it possible to see one end of the train from the other.

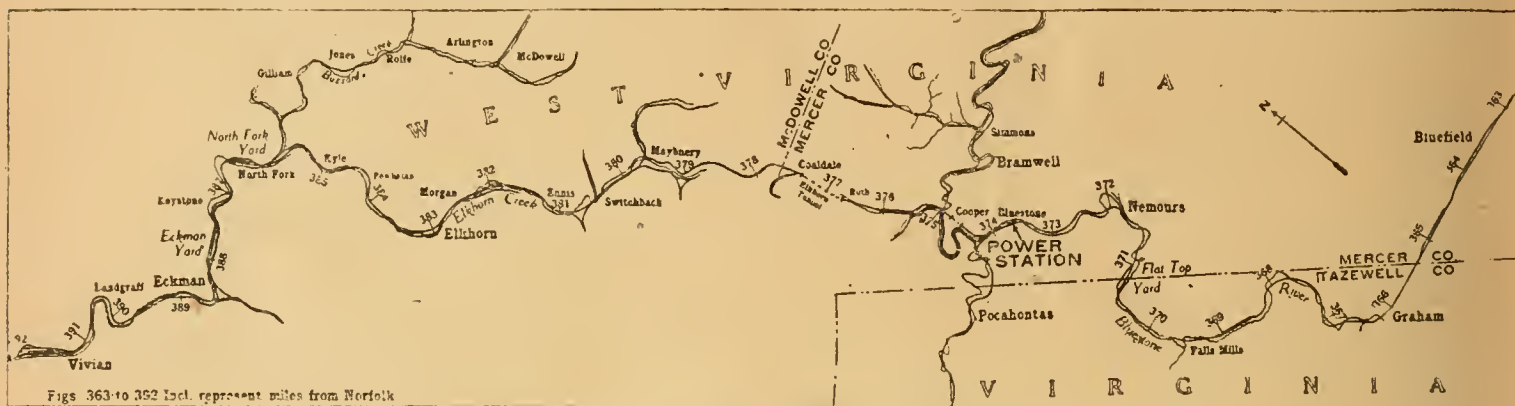


Fig. 10.—MAP: ELECTRIFIED SECTION, NORFOLK AND WESTERN RAILROAD.

Electric Lamp Standardising and Fuel Economy.

A plan to save electricity and thereby fuel by the elimination of inefficient incandescent lamps has been adopted by the United States Fuel Administration, and became effective on September 15, 1918. According to the *Electrical Review*, Chicago, the following programme is recommended: (1) The elimination of unnecessary types of standard carbon lamps and of carbon lamp types for special application as follows: The standard 60-watt multiple carbon lamp 100-130 volt range; the standard 20-watt S-14 bulb multiple carbon lamp 100-130 volt range; the 120-watt standard multiple carbon lamp 100-130 volt range; the complete elimination of standard 30-watt and 60-watt round-bulb multiple-carbon lamps, and all other types of 100-130 volt range multiple-carbon lamps with standard base for decorative purposes. (2) The complete abandonment of the installation and renewal of carbon incandescent lamps of all sizes and discouragement of their use for any use or application for which tungsten lamps can be substituted; this policy to go into full effect not later than September 15th, 1918. (3) The gradual abandonment of the installation and renewal of metallised filament (Gem) lamps of all sizes and discouragement of their use for any use or application for which tungsten lamps can be substituted. Under special and

unusual conditions where it is absolutely necessary to use lamps with exceptionally robust filaments owing to rough handling or excessive vibration, the use of carbon lamps is recommended so that the metallised filament (Gem) type may be completely eliminated. This policy to go into full effect not later than November 15th, 1918. (4) That the use of considerable numbers of the smaller sizes of lamps for commercial and industrial applications be eliminated where it is practicable to substitute for them large single gas-filled lamps of highest efficiency in a smaller number of lighting units. (5) That the use of vacuum tungsten lamps in sizes of 100 watts and over be eliminated and whenever practicable gas-filled tungsten lamps of highest efficiency be substituted therefor. (6) That electric light and power companies employ no differentials in their price schedules for the sale or renewal of lamps which may tend to encourage the use of larger sizes of lamps rather than smaller sizes, except as such differentials are justified by differences in the cost of the service. (7) That all manufacturers of carbon and metallised filament (Gem) lamps insert with each standard package of such lamps shipped by them a printed notice directing the attention of the user of the lamps to the fact that the particular lamps in the package should be used only in locations where it would be impracticable, because of excessive vibration and rough handling or for therapeutic and heating purposes, to use satisfactorily a more efficient type of lamp.

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RESIDUES, MATTES, CONCENTRATES, PRECIPITATES.

American and German Manufacturers.

The vaunted superiority of German research and manufacture is largely "bluff," and is based upon a high capacity of advertising on the part of the German and a tendency in the past for the American to swallow the former's statements, and accept him at his own valuation, even to the depreciation of the American. This is the view taken by Mr. H. H. Dow, President of the Dow Chemical Company, U.S.A., in a paper published by the Cleveland Engineering Society. He instanced the Siemens-Halske Company, which about 20 years ago started a plant in America to build the Siemens-Halske electric generator, which was of a curious type, having an armature outside the field coils and the commutator outside the armature. On the strength of the general reputation of Germany for scientific and electrical work, the design was largely accepted and introduced, but it is now practically obsolete and unknown. On the other hand, the Westinghouse Company, about the same time, introduced a multiple-pole generator very similar to the type it manufactures to-day, except that there were no commutating poles. The Dow Company bought two of these—the larger one in 1897—and they are still in use.

In many chemical compounds for medical purposes the German products have been used by American doctors, and more extensively than American products of equal quality, largely because the former have been given a fictitious value by extensive advertising and "booming."

The wide use of potash as an agricultural fertiliser is attributed by Mr. Dow to the extensive advertising, and the broad claims made for it by the Germans. In his own opinion, it is rarely needed or useful, and this view is supported by Dr. Hopkins, of the Illinois Experiment Station. Furthermore, the American has the tendency and ability to do things on a large scale where the German sticks to laboratory methods. Thus, before the war, soda-ash and caustic soda were made and sold in America at a less price than in Germany, probably because of the mechanical ability to handle the matter on a commercial scale. Where Germany has an established manufacture it has been difficult to get American capital to invest in similar manufacture, the idea being that it will be impossible to compete with German science and skill. But in cases where capital has had the courage to meet the situation the results have been highly satisfactory. This has been the case with the dye industry, which was practically in the hands of the Germans up to the time of the present war, but which has been developed and put on a commercial basis by American chemists and manufacturers. As for personal or mental capacity, it is certain that

the German has no superiority. Part of his former assumed strength was due to the weakness of his opponent in taking such superiority for granted, part to an ability in trading, a large part to his self-assertion, and a larger part to his entire lack of any comprehension of ethics or commercial honesty. His principle always has been that the end—however small—justifies the means—however foul.

The American manufacturer is on a very different footing now than before the war. His eyes have been opened to his weaknesses and his opportunities. His field has widened, at home and abroad. He sees that it is dangerous and entirely unnecessary to rely upon or to give way to foreign rivals, and almost overnight he has seen his negligible mercantile marine expanded into a large and powerful commercial asset which he will not drop or lose when the war ends.

Mr. Walter M. Campbell, A.M.I.C.E., at present Circle Engineer in the Union Irrigation Department, Uitenhage, has been appointed water engineer to the Borough of Durban. Mr. Campbell was formerly associated with water-works undertakings in Belfast (Ireland), and Bury (Lancashire, England), and during the past six years, whilst in charge of departmental activities at Bloemfontein, Cape-town, Cradock, and Uitenhage, he has gained very widened experience of the hydrographic conditions and irrigation potentialities of the Union.

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Company Meetings.

KLERKSDORP PROPRIETARY.

The annual meeting of shareholders in the Klerksdorp Proprietary Mines, Ltd., was held on December 2. Mr. W. P. Fisher, in moving the adoption of the report of the directors and accounts, said:—The issued capital of your company remains the same as at the last statement of accounts, and the balance carried to the credit of profit and loss account, is £2,073 9s. 3d., but this amount includes the sum of £940 17s. 2d., being part of the amount at credit of reserve for bad and doubtful debts not required, and written back. The amount under the heading of sundry debtors has been reduced by £780, whilst the cash represented by cash in hand and investments in English treasury bills, war loans, and National War bonds, etc., less the amount due to shareholders under the reconstruction scheme is £13,148 1s. 7d. Since I addressed you last year the Main Reef West, Limited, has been absorbed by the Consolidated Main Reef Mines and Estates, Ltd., and we received for our debenture holding of £16,484, in the former company, 14,835 fully-paid £1 shares in the latter company being at the rate of 90 shares for each £100 debenture, and 1,200 shares on surrender of 6,000 ordinary shares, being one for five. So that our total holding in the Consolidated Main Reef Mines and Estate Co., is now 16,035 shares. Since the closing of the accounts we have sold four small farms in the Waterberg district at prices in advance of the amounts at which they stand in our books, and I may add that we retain the mineral rights of these farms. It was suggested to the Board by some of the larger shareholders in England that a cash distribution should be made to shareholders. Now as this would absorb all the available cash at our disposal and preclude any possibility of our being able to entertain any fresh business, however attractive, it was a matter calling for very serious consideration and if agreed to, really meant the gradual liquidation of the company. After full consultation with the directors in London, and seeing that something like 80 per cent. of the shares are held in Europe, it was decided to return the shareholders the sum of 2s. per share, which will absorb £18,838. All the details of the proposition are embodied in the resolutions, which will be submitted for your acceptance at the extraordinary general meeting which follows. Seeing that the war is now happily over, and it is generally admitted that South Africa is about to embark on a period of great prosperity, when there will be unlimited opportunities for safe and profitable investments, I am sure there are many shareholders who may question the wisdom of this decision, but in the face of the expressed wish of those who certainly were entitled to make it, your Board had no reasonable alternative but to agree. Owing to the nature of some of our investments, it was impracticable to place the company in immediate liquidation. Indeed, in my opinion, it would not have been in the best interests of shareholders to have done so having regard to the nature of some of our assets. We shall, of course, keep this

in view and endeavour gradually to realise the remaining assets to the best advantage when favourable opportunities occur, and when this object has been achieved I think I can promise you that final liquidation will not be unduly delayed. I regret that Mr. J. H. L. Manisty, one of your directors who has always taken a great interest in the affairs of the company, is prevented by illness from being present to-day, and I am sure you will join me in wishing him a speedy restoration to health.

The report and accounts were adopted, and the directors, all of whom retired, were re-elected, Messrs. A. Aiken and Carter and J. H. Rainier were reappointed auditors.

JOHANNESBURG BOARD OF EXECUTORS.

The annual ordinary general meeting of the shareholders of the Johannesburg Board of Executors and Trust Company, Limited, was held in the Board Room of the company, 97, Commissioner Street, Johannesburg, on Nov. 27. Mr. Llewellyn Edwards presided, and there were present either personally or by proxy:—Messrs. S. J. Wilks, C. H. Barclay, D. F. Gilfillan, Walter S. Webber, R. Niven, H. Curtis, A. Howat, G. A. Jones, J. E. Neale, W. H. Thorne, J. T. Goldsbury (manager), A. H. Robertson (acting secretary). There were represented 10,201 shares out of a total issued capital of 25,000.

The chairman, in moving the adoption of the report and balance sheet, which was taken as read, said:—In a conservative institution of the nature of our Board, we naturally do not expect to find any startling feature presented to us, and our statements merely record a quiet steady upward progress. Such a progress we have been warranted for years past to lead you to anticipate. A decade since, we adopted a policy which was, and is, different from those followed by most Corporations in our particular channel of business. Other companies of similar character consider themselves entitled to employ in current business the surplus floating balances belonging to clients, or estates, or the like. Possibly they are quite right in doing so. We do not pose as mentors. We merely state that long ago we decided that the Johannesburg Board of Executors would not do so. Whatever monies we have at any time belonging to our clients are placed immediately in a distinct and separate account at the bank, and are never drawn upon except for account of the owner, or by his instructions or by those of his legal representatives. This policy in its initial stages had the demerit, from our shareholders point of view, of reducing the company's immediate earning power. That it undoubtedly did, for a time. Your directors, however, took the long view. They considered that if they provided absolute security to the Board's clients, the certainty of those clients being able to get all due to them, no matter what the circumstances might be, would render the ultimate result doubly satisfactory. Clients would have their due, our business would expand, and our profits would ultimately be enhanced proportionately.

Public Confidence.

The chief reason which influenced the directors in adopting so conservative a policy, was the desire to instil confidence in the general public, and induce them to avail themselves of the company's services as executors and administrators of their estates, and as trustees. This is one of the principal objects for which the company was originally established, and one which they have successfully cultivated. This is a point the directors wish to bring prominently to the notice of the public generally, and especially to those who have not already availed themselves of our services in this direction. To illustrate in concrete form what I am saying I will ask you to refer to the balance sheet. You will see, on the debit side, that we are liable for monies due to clients £21,744. On the opposite side of the balance sheet you will find that we have to our credit in trust account at the National Bank £23,027. That simply means that if all our clients ask for all their money at any moment, we have only to draw a cheque. That is our fixed system, and we never depart from it. As I said, although the initial effect of this policy was to reduce our immediate profits, we considered that in the long run the company would benefit by accession of business. That view is being steadily and surely justified. Our clientele continues to expand in gratifying manner, which is natural, since we cater for all, for the man of moderate means as well as for the wealthy one. All are sure that any obligation assumed by the Johannesburg Board of Executors is always discharged in a manner at which no critic can cavil. The increase of business to which I have referred is, you will be pleased to observe, reflected in the profit and loss account. The net earnings for the year total £3,811, which compares with £3,129 for the corresponding period of 1917. The directors, being fully satisfied that all necessary provision has been made for depreciation and similarly for any probable doubtful debt, feel justified in recommending a dividend of 10 per cent. They also recommend a bonus of 6d. per share, and that both dividend and bonus be paid free of dividend tax to shareholders registered as such on the 30th November, 1918. Our staff is still depleted in respect of those of our officers who are on active service. In that regard our company has in every way borne its full share, and our proprietors will agree with us that it has been our proud privilege to have been able to do so. The resulting weight of the work and responsibility has been heavy on the rest of our staff, and our thanks are due to Mr. Goldsbury, the manager; Mr. Robertson, the acting secretary; and their assistants for the manner in which they have carried out their duties.

I cannot refrain, in conclusion, from pointing out to you the unique position of our company. Our capital (£25,000) and reserve fund (£10,000) are intact, and represented by sound assets; we have the goodwill of a first-class increasing and profitable business; we have no debts, and our shareholders and our clients are quite content with us.

The report and accounts were adopted.

The Chairman stated that Mr. Robert Niven was the retiring director in terms of the articles of association, but was eligible and offered himself for re-election. As there was no other nomination Mr. Niven was declared duly elected.

The retiring auditors, Mr. H. F. Watson and Messrs. Alex. Aiken and Carter, were reappointed.

VICTORIA FALLS AND TRANSVAAL POWER CO., LTD.

The ordinary general meeting of the Victoria Falls and Transvaal Power Company, Ltd., was held on October 11th, at Salisbury House, London Wall, E.C. The Most Hon. the Marquess of Winchester (Chairman of the Company) presided.

The Chairman, in moving the adoption of the report and accounts, said: The balance sheet and profit and loss account are drawn up in the same form as in previous years. The latter shows a further improvement in revenue of over £36,000. This improvement during a period of such exceptional circumstances, which increase the cost of everything we require, is a source of great satisfaction, and reflects the greatest credit to our staff both in South Africa and London. In July last we declared the same dividends as in respect of 1916 on the ordinary and preference shares, the latter again receiving the full amount of participation to which they are entitled.

BALANCE SHEET.

The auditors' certificate is in the simplest form. The item £41,653 is represented by about £30,000 cash remitted to the Dresdner Bank immediately prior to the outbreak of war for payment of the coupon on the first debentures, which matured for payment on July 1, 1914, the balance being contractors' retention account. The amount of first mortgage debentures purchased and drawn for redemption, but not yet presented for payment, has increased from £161,480 to £312,444; the figures I have quoted include the premium. Only a small proportion of this issue was held in this country, the issue having been taken entirely by the Dresdner and Deutsche Banks. This naturally accounts for the small amount presented for cancellation. The second mortgage debentures have now been reduced from £1,650,000 to £1,376,640, the total reduction of your debenture indebtedness being £573,360, leaving the amount of first and second debentures outstanding £4,076,640. The reserve fund, constituted last year by an appropriation of £150,000, has been increased by £50,000, which, in view of the constant reduction of the debenture debt, we consider a sufficient sum to set aside annually until the reserve fund has been brought up to a sum commensurate with the scope of our undertaking. Creditors and credit balances have been increased by £247,508, the present amount being £1,064,922, representing for the most part the increase on the amount of interest on the first mortgage debentures remaining uncollected and amounts reserved for taxation. On the other side of the balance sheet in cash, British Government securities, etc., aggregating a sum of £1,925,635, is shown the necessary funds to meet this amount of £1,064,922, including the reserve fund, unclaimed debentures and profits. You will there also find the reductions allowed for depreciation and the value of general stores and spare parts. This item shows a slight increase, which is owing to increased production of our own workshops. Debtors and debit balances, £97,896, shows an increase of £21,000 over last year. Of this amount about £93,000 has been paid, the balance being mostly claims against enemy contractors which cannot be dealt with during the war. Our cash at banks and deposit accounts has increased by £116,401. Our holding in Treasury Bills has decreased, but against that our investment in 5 per cent. War Loan, to which your attention was drawn last year, amounts to over half a million, whilst Exchequer Bonds and National War Bonds costing £328,393 aggregate a sum of £1,925,635, as against £1,498,306 at December, 1916. Our carry forward amounts to £97,690, as against £72,400. Since the date of the balance sheet a case

has come before the law courts which is of interest to you. The judgment has given us matter for consideration. I refer to the action of *Roser versus the South African Breweries, Ltd.* In this case it has been held that no higher rate of income tax can be deducted from dividends declared than is actually paid by the Company on its profits, taking into consideration the allowance made in relief of Colonial income tax paid by the company in the country from whence the profits of the Company are derived. Those of you who received the July dividend warrants will have noticed that Colonial relief will be remitted to you so soon as the amounts of relief have been agreed. It would have been more satisfactory if it had been possible to do so, to include this small amount on the dividend warrant; but this was impossible, because, although we had presented our claim, we had not then, nor have we yet, had the amount agreed upon which the relief would be granted by the Inland Revenue Authorities in this country.

THE GOLD MINING INDUSTRY.

The position of the low grade mines has been a source of anxiety to those concerned in their management, and much credit is due to all concerned in maintaining them at the point of production. The one commodity which is of first rate importance to the industry is the price of power, and that, owing to your undertaking in their midst, has, as is fixed by statute, remained the same. Gold mining and the supply of power to the mines are the two industries in which profiteering is impossible. In both wages rise, consumable stores, spare parts, etc., rise, the only way in which we can meet this is by economy of production. We cannot maintain regularity of supply and fail in maintaining our plant at the highest point of efficiency; skimping our upkeep would not assist us, therefore the only way is to study economy of production, and in this direction our staff and all ranks of our personnel in South Africa deserve your appreciation in the pursuit of economies. They have not been tried and found wanting.

DIRECTORS' FEES.

The question of the amount paid to the Directors of the Company, as fixed in the Articles, has been considered, and in view of the largely increased scope of the Company's business and the decrease in the number of Directors since the foundation of the Company, the claim that the sum allocated for the remuneration of the Board seems ripe for consideration. Under Article 87, each Director shall receive as remuneration for his services the sum of £400, with an additional sum of £200 for the Chairman. Article 82 fixes the maximum of Directors at 15, with a minimum of six. The proposal, which would only affect six of the Directors, which is under consideration, would be to increase the remuneration of each Director, other than those who are members of the executive, from £400 to £600, and at the same time reduce the maximum number of Directors from 15 to 10. Should it be decided to proceed further, a special meeting will be convened, and the necessary resolutions submitted to you.

Lord Brabourne (Director) seconded the motion, which was carried unanimously. The retiring Directors (the Marquess of Winchester and Mr. F. Astley Cooper) were re-elected, and, the Auditors having been re-appointed, the proceedings terminated.

MONTELEO DIAMONDS.

The ordinary general meeting of shareholders of the Monteleo Diamonds, Ltd., was held on Dec. 4 in Bettelheim Buildings, Johannesburg. Mr. H. de V. Steytler presided.

The Chairman said they had carried over from last year's accounts a sum of £5,720 10s. 2d., which, together with the net profit for this year made a total sum of £6,315 18s. 3d., standing to the credit of the profit and loss account; £5,685 10s. 9d., which came out of profits, represented a sum expended in development. The value of the diamonds won for the year was £12,170, which brought the total value of the diamonds recovered from the mine to £22,998. The expenditure for the year under the heading of mining and development, and removal of overburden, was £10,586 17s. 5d., but during quite three months of the year the mine was being developed and construction work was carried on in connection with the erection of the aerial gear, crushers and rolls, necessitating the cessation of washing of mine ground operations, with the consequent loss of revenue and accounting for the fact that only an average of 100 loads per day of mine ground were treated during the year. On account of these cessations of work, the cost per load of mine ground treated was exceptionally high, viz., 7s. per load, and yet the company worked at a profit, small though it was. On three occasions during the last rainy season, notwithstanding every precaution, the mine was flooded. Out of the revenue earned this year they had taken about £2,600 and appropriated it in the expenditure of the additional machinery and plant and pumps to cope with the great influx of water which was struck at the 125 feet level in the prospecting shaft which was being sunk to prove the extent of the mine. But for this their profits would have been considerably enhanced. Up to now they had hauled in all, since the inception of the company, something like 300,000 loads of waste, hauled and dumper, at a cost not exceeding 5d. per load. The prospecting work had shown an increase in the size of the mine at the 125 feet level, but not to a very great extent. During October the mine was visited by the terrible epidemic, resulting in a serious loss not only financially but in time so far as stripping is concerned; that meant that instead of restarting operations at the end of November they would not be able to start before the end of this month. When they did start up again they should have a very successful run for some time. The ground treated during the period under review had shown a value of £41 per hundred loads, whereas the ground treated during 1917 showed a value of over £56 per hundred loads. The difference was, in his opinion, accounted for by the fact that the treatment of the blue ground (through the want of a second set of rolls to thoroughly pulverise the ground) was not complete. This second treatment was in vogue at all mines where direct treatment of blue ground by rolls was the practice, but, unfortunately, no second set was obtainable in the country at present at anything like a justifiable price. They had therefore a large quantity of blue ground on the dumps that required further treatment. The difference in the yield showed that the diamonds were in the untreated ground, for in 1917 the yield was at the rate of 23 carats per hundred loads, and in 1918 17.21 carats, and no man would convince him that when passing from the yellow to the blue the ground would reduce in yield by six carats per 100 loads. That loss, he was sure, would be recovered at the next treatment. In an interim report the board advised that it was installing two machines invented by Mr. A. G. N.

Burden for the treatment of blueground. The machine had been tested, and the inventor was confident it would do away with the necessity of using heavy and cumbersome rolls. The prospecting work dealt with in the manager's report was now in progress, and the last advices showed that the tunnel from the east end of the mine was now in 142 feet, and should about reach the spot where the manager anticipated further diamondiferous ground would be encountered—whether of a payable nature remained to be seen. Diamonds existed in that area. The only expenditure during the coming year, so far as they could foresee, would be in connection with the mining operations, as there would be no further construction work to be done. Were it not

for the strike of the moulders, the Burden machines would have been installed by now and treating the half-treated ground dumped. Various parts of the machine had to be made in different places, and this, of course, caused unnecessary delay. Boys had not been too plentiful, and since the epidemic the company had been handicapped very much, but by recruiting the full complement could be kept up. During December, 1917, the Government had proclaimed the diamondiferous area on the portion of the farm Erfbloem a mine within the meaning of the Precious Stones Ordinance, 1904, O.F.S. The company had intimated its intention to work the whole mine in accordance with the Ordinance. It was, however, the intention of the Board.

when the occasion presented itself, to negotiate the terms of an agreement with the Government. The financial position of the company was sound. Its entire equipment and the freehold of its portion of the farm Erfbloem had been paid for, and it had no debts. The cash reserves in hand at present would enable the company to clear the mine of a considerable portion of its heavy overburden and also, after paying for the new machines to be installed, leave a considerable sum in hand.

The report and accounts were adopted. Mr. H. de V. Steytler and Dr. R. A. Ross were re-elected to the directorate. Mr. A. E. Steytler was reappointed auditor.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal and Engineering Record* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The strike of the Block "A" section of the Randfontein Central still continues, and a Board of Reference, representative of the Men's Union and the Chamber of Mines, has been sitting all the week and taking evidence. The Board is presided over by Sir Evelyn Wallers, and it is safe to say that both sides are being given every opportunity to air their views.

* * * *

A leading engineering firm on November 14 sent the following cable to the chief business expert connected with its New York house: "What do you consider prospects of changes in regard to costs, material and freights during the next six months?" To this the following reply, dated December 3, has been received: "Do not anticipate any change in costs or materials. Freights uncertain, probably will remain stationary." The cabled reply speaks for itself.

* * * *

The Imperial Institute, in continuation of its publications with reference to the mineral resources of the Empire, has now issued a map **The Empire's Mineral Resources.** with diagrams indicating the sources within the Empire of the chief metals of commercial importance. The outline map shows the occurrence in each British country of important metallic ores, and also the existence of deposits at present unworked. The diagrams attached to the map give for 1915 the production of each country as well as the total British output and the world's output of each important metal or ore. Among the striking features disclosed are that in the case of gold more than half the total production is within the Empire, the principal producer being South Africa; with silver the British proportion is rather less than one-fifth, the principal producer being Canada; in the cases of manganese, chromium, tin and molybdenum the British proportion is near one-half. It is remarkable that there appears to be scarcely any production of the valuable metals mercury and platinum within the Empire, so that we are almost entirely dependent on foreign countries for supplies. This publication should prove of great general interest apart from its importance to those specially concerned in mining operations and should be of considerable value for educational purposes. The map, which is folded and mounted on linen, has been prepared with the advice of the Mineral Resources Committee of the Imperial Institute, of which the late Lord Rhondda was chairman at the time of his death. The map with diagrams has been placed on sale at a price of 5s: 6d. post free.

* * * *

Sir Abe Bailey writes to the London papers as follows:—
"In South Africa we, the majority of South Africans, have no politics, at any rate for the present; we support Botha, and our little support and influence in this country go to Lloyd George. We think these two men are the outstanding figures in the British Empire among the many who have saved that Empire. Personally, I think every Britisher should feel the same. It is a great pity the Labour Party in Britain—those who have remained behind and not in the trenches—should allow Bolshevism to appear among them, for they have benefited more through the war and will benefit more through a successful war than any other class. It is time some of the politicians told them straight, and not to have an eye on the ballot-box, that this nibbling at the assets of those who have should cease. It is a constant demand for more, and, like the opium habit, it grows on one and becomes a most dangerous habit. Thank goodness, the war is getting into the last lap, and we have only to hold on, set our teeth, and we have the bullies beaten. Then peace, and I hope there will be no conference without Lord Milner and General Botha—men who know what they want and how to get it.

Let us hope peace will bring a reunion of the English-speaking races. I always bear the words of Cecil Rhodes in mind when speaking about his American scholarships. He said. 'Bailey, everyone should work to bring the Britishers and Americans together; an English-speaking combination means the peaceful development of the world, and personally I would not mind if the capital was Washington.' Truly the words of a large-minded man. Few people in Britain really appreciate his great work at its true worth."

* * * *

The report of the directors of the Wolluter for the quarter ending 31st October, 1918, states that the development work was as follows: Total
The Position of the Wolluter. footage, 1,624 feet; total footage sampled on reef, 1,176 feet. The payable reef

disclosures were as follows: Main Reef, 145 feet, width 38.5 inches, assay value 9.9 dwts.; Main Reef Leader, 143 feet, width 15.7 inches, assay value 33.1 dwts.; South Reef, 352 feet, width 33.2 inches, assay value 16.1 dwts. Compared with the previous quarter, the tonnage crushed was less by 5,000 tons and the yield per ton was 5.504 dwts. against 5.701 dwts. The lower tonnage was occasioned by the Spanish influenza epidemic, combined with the decrease in the native labour force. The epidemic was responsible for 15 deaths amongst the natives, but fortunately none of our white employees succumbed. The native labour position is becoming still more acute. A dividend (No. 22) of 2½ per cent. was declared on 22nd October, 1918, for the period ending 31st October, 1918, and will be payable from the head and London offices to all shareholders registered on the company's books at 31st October, 1918. Holders of share warrants will receive payment of coupon No. 22, attached thereto, on presentation at the London office. The Provincial Gold Profits Tax Ordinance, 1918, which was passed by the Transvaal Provincial Council on 25th June, 1918, has now become law. No provision, however, has been made in the attached accounts for the tax, as legal action will be taken with the view of testing the authority of the Transvaal Provincial Council to levy such taxation.

* * * *

We understand that by mutual arrangement, and with full approval of Messrs. Sulzer Bros., of Winterthur, Switzerland, their agency for centrifugal pumps, centrifugal fans, Diesel engines, etc., has been transferred from Messrs. A. F. Robinson, Ltd., to Messrs. Rice, Wilson & Herd, of Standard Bank Chambers. Mr. C. Diethelm will continue to act as Messrs. Sulzer Bros.' direct representative with Messrs. Rice, Wilson & Herd.

A Business Change.

* * * *

The result of the operations at the East Rand Proprietary Mines for the quarter shows a loss on working account of £12,633, to which has to be added the cost of the debenture interest, redemption of debentures, underground rights annuity payable to Government, and miners' phthisis compensation, etc., estimated to amount to about £11,000 per month. These poor results were largely due to an accident to the Hercules shaft during September, which suspended operations in that section for two weeks, thereby seriously reducing the tonnage milled in that month. The influenza epidemic also adversely affected operations during September. The tonnage crushed for the quarter is 29,500 tons less than for the previous quarter, the value of the yield being practically the same. Towards the end of the quarter the value of the ore mined showed some improvement. Recent development has also shown an improvement in some sections of the mine, which are, however, very widely separated; it is expected that stoping will commence in these sections before the end of the current year, when an improved grade of ore is hoped for. The native labour supply still remains far short of requirements, and the influenza epidemic in the native territories is having a very adverse effect on the labour supply. The financial position shows the value of cash and cash assets on hand at £489,891 after allowing for all liabilities other than debentures outstanding and balance of Government annuity—this sum includes the mine development suspense account

E.R.P.M. Position.

(£304,972), but excludes the amount realised by the sale of plant assets. £51,334, which is being held in suspense, and which sum is also in hand. The financial shortfall for the quarter is £63,151. Operations will be continued to the end of the year, when the position will be again reviewed with the view of ascertaining whether the anticipated better grade of ore will enable the company to earn profits sufficient to meet the standing charges. The development accomplished during the quarter was as follows: Total footage, 4,896 feet; total footage sampled on reef, 3,305 feet. The payable reef disclosures were: Main Reef, 25 feet, width 18 inches, assay value 24.4 dwts.; Main Reef Leader, 2,665 feet, width 27 inches, assay value 18.2 dwts.

* * * *

Reuter's Agency is officially informed that the following are the numbers and amount of applications received for the present issue of local registered stock up to and including the 4th inst.: Applications through banks, Receivers of Revenue and Treasury for cash; applications through Post Offices and applications by conversion of Treasury Bills, and total:—4½ per cent. stock: 267, £509,011; 13, £2,175; 12, £37,400; total, 292, £548,586. 5 per cent. stock: 1,727, £1,851,815; 157, £50,070; 189, £661,600; total, 2,073, £2,553,485. Grand total: 1,994, £2,360,826; 170, £52,245; 201, £699,000; total, 2,365, £3,112,071. The following, showing the geographical distribution of the above applications, will be of general interest:—4½ per cent. stock and 5 per cent. stock: Cape-town and suburbs: 82, £92,321; 789, £1,110,206. Port Elizabeth: 5, £9,800; 103, £152,139. Kimberley: 7, £3,700; 32, £43,366. East London: 1, £1,000; 26, £72,350. Other places in the Cape Province: 37, £48,780; 339, £335,913. Total, Cape Province: 132, £155,591; 1,289, £1,713,974. Johannesburg and Reef: 42, £130,855; 147, £144,125. Pretoria: 13, £9,910; 64, £239,610. Other places in Transvaal: 8, £6,130; 45, £29,500. Total, Transvaal: 63, £146,895; 256, £413,235. Durban: 33, £175,300; 115, £181,487. Maritzburg: 19, £38,650; 98, £76,590. Other places in Natal: 21, £25,220; 70, £55,516. Total for Natal: 73, £239,170; 283, £313,593. Bloemfontein: 2, £1,100; 22, £27,398. Other places in Free State: 4, £2,105; 46, £29,165. Total for Free State: 6, £3,205; 68, £56,563. Outside the Union: 5, £1,550; 20, £16,050. Post Office applications not yet allocated: 13, £2,175; 157, £50,070. Totals: 292, £548,586; 2,073, £2,553,485. The public is again reminded that the date of closing the subscription lists has been extended to December 31 this year.

* * * *

The Board of Trade Journal reproduces a statement by the Director of the United States Department of Mines calling attention to the importance of the metal mining industry in the present war and to the vital necessity for a supply of home-produced nickel, manganese, or chromium. "The ultimate success of our country in the present world-wide catastrophe," the Director states, "depends very greatly upon the intelligent prospector and upon the metal mining industry as a whole. For our own use in this war we need manganese, chromium, pyrite, sulphur, and the other miscellaneous metals. At the present time this country is sadly deficient in these materials. By far the larger portion of them is imported. Yet all of them occur within our borders, and investigation and experimental work would doubtless render them available and make this country independent of all outside source. So long as any of these essentials must be obtained from foreign sources the United States will be to that extent dependent. The country should be able not only to manufacture munitions of war in great quantities but also munitions of the highest quality. The United States has enormous deposits of iron ore, and the coal with which to smelt it. So far as the supply of iron is concerned our Government need not look outside its boundaries; but sight should not be lost of the all-important fact that we do not now produce nearly enough nickel, manganese, or chromium."

TOPICS OF THE WEEK.

THE RHODESIAN RAILWAY CONTROVERSY.

WE have received from the Rhodesia Railway Commission Committee a bulky publication dealing with the long-standing railway controversy of that country. It will be remembered that an enquiry was held into the whole matter early this year before Mr. W. M. Acworth, who was appointed for the purpose as Railway Commissioner. Mr. Acworth had had a long and intimate association with railway problems, and among the rest was a member of the Committee appointed in 1906 by the Board of Trade in the United Kingdom to enquire into the financial and statistical returns of the various railway companies in Great Britain. Mr. Acworth's report was described by himself as substantially amounting to a verdict in favour of the Rhodesian Railways on all three counts of the indictment brought against them, i.e., (1) the criticisms as to the financial history of the companies, in regard to capitalisation and relative assets; (2) the financial policy subsequently adopted; and (3) the justification or otherwise of the existing rates. The Commissioner at the same time expressed the hope that the report would help not only to remove misapprehensions, but to allay the mistrust and suspicions that had arisen therefrom. This hope, unfortunately, has not been realised. The Committee of complainants, as constituted in connection with the enquiry, comprised the Rhodesian Chamber of Mines, Salisbury Chamber of Mines, Rhodesian Small Workers and Tributors' Association, the Bulawayo and Salisbury Chambers of Commerce, and the Agricultural Union. This Committee has declined to accept Mr. Acworth's report as a satisfactory adjudication on the essential issues involved. It has accordingly prepared a comprehensive Memorandum in which these essential findings are critically reviewed. The Memorandum is signed by the members of the executive, Sir Bouchier Wrey, Bart., Messrs. E. A. Hull and Geo. Johnson. Sir Bouchier Wrey and Mr. Hull have also drafted a separate Note on an individual point, having reference to the proposed Messina railway. Further, Mr. J. G. McDonald, O.B.E., who prepared the case presented at the enquiry on behalf of the Rhodesian Chamber of Mines, has framed an individual reply to Mr. Acworth, traversing various features of the report. The Salisbury Chamber of Commerce has drawn up a statistical statement, relating to railage and prices of foodstuffs at Salisbury, which it contends more accurately represents the position than did the figures from railway sources placed before the Commissioner. Finally, the General Manager of Railways and Harbours of the Union, Sir Wm. Hoy, in his latest annual report issued a few weeks ago, has made a vigorous reply to Mr. Acworth, touching certain features of the Rhodesian enquiry and report having to do with comparisons between Rhodesia and Union railway policy and results. The Rhodesian Railway Commission Committee has republished, in the compilation now under notice, Mr. Acworth's report, and appended the several documents to which we have referred, in order that the public may have before them all the points at issue. It is only possible here to touch on a few of these points. Mr. Acworth, in his report, stated exhaustively his reasons for the conclusions arrived at. He held that while railway policy and rates are substantial factors in helping or hindering a country's development, an unduly pessimistic view has been taken of their importance and influence in relation to the progress of Rhodesia. Looking ahead, and taking the prospective growth of population and development of natural resources into account, it should be possible, he suggested, to continue a steady policy of substantial rate reductions. Given a good understanding between the railways and the public, it should be feasible to fully discuss, and in the main arrive at an agreement on, the form which those reductions should take. To this end he counselled greater publicity on railway matters—the more so since the Rhodesian railways are owned in and must ultimately be controlled from London, by absentees who—if they chose—might be autocrats. While coming to the conclusion, on all

the chief heads of the enquiry, that the complainants had failed to establish their case, he considered that the complaints brought forward were in the main based on misunderstandings due to want of knowledge. The railway authorities, he thought, had been unduly reticent. The public were entitled to greater information. He recommended the issue from year to year of a consolidated railway report on the working of the entire system similar to that presented by Sir Wm. Hoy in the case of the Union lines. He further advocated the constitution in Rhodesia of a Railway Council, as a means of bringing the railways and the public into contact, and of promoting mutual understanding and harmony, though not in any way as a means of interference with the internal management of the companies. He also expressed his sympathy with the suggestion made in the course of the enquiry that the railways should appoint one or more representatives to go about among the people, visit the Chambers of Commerce, agricultural shows, etc., interview traders, communicate railway information to the Press, and generally promote a better knowledge and understanding of railway affairs. The Railway Commission Committee, in their Memorandum, emphasise these recommendations as showing that even a report which has been hailed as a complete victory for the railway companies acknowledges the position to have been in various respects unsatisfactory. The Committee specially emphasises the stress laid by the Commissioner on the complete absence of public control, in which respect the Rhodesian position is admittedly unique. This state of things, the Committee contends, should not be allowed to continue. It urges that even if the Commissioner's recommendations for greater publicity and the constitution of a Council were given effect to, there would still be no guarantee of any improvement in existing conditions. It demands, in effect, for the people of Rhodesia, "that measure of control, supervision and responsibility without which no satisfactory solution of the railway difficulty in Rhodesia can be found." Enough has been written to show that the whole matter merits careful study by everyone interested in the future of Rhodesia.

His many friends on the Rand and throughout South Africa will regret to hear of the death at Capetown on Thursday of Mr. Hubert Davies, head of the well-known firm which bears his name. We hope to print an adequate obituary notice of the deceased gentleman in our next issue.

The following interesting notes showing the development of industries in the Union appear in the *S.A. Journal of Industries*: A proposal is on foot to start the manufacture of woollen blankets, cloth, etc., at East London. Nearly one hundred extra hands were engaged by the sweets and confectionery factories in the Cape Peninsula during September. Ochres of various colours are being worked on a property near Pietmaritzburg, and clays suitable for firebricks have been sampled. By the end of the year it is hoped to have nine machines installed at a new rope works near Durban. The factory buildings are now in course of erection. A Durban firm advises that it is now manufacturing glucose in large quantities. The selling price is £45 per ton of 2,000 lb., barrels free, f.o.r. Durban. Good asbestos boiler lagging and steam-pipe jointing are now being turned out by a Natal company, and it is stated that the South African Railway Administration has offered to take all the jointing the company can produce. Very fair medicine and other small bottles, made from glass scrap, are being manufactured at Dundee (Natal). The company concerned is now erecting another furnace, and the prospects of a glass industry at Dundee appear promising, as it is said that suitable sand for glass-making has been found close at hand. The progress of the company's experiments with this raw material will be watched with interest. The manufacture of plaster of paris has been carried on for some time in Johannesburg. A second firm also contemplates the setting up of plant for the production of cold-water paint. The raw materials to be used will be obtained entirely from local sources.

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THE YEAR WITH THE WITBANK COLLIERY.

THE report of the directors of the Witbank Colliery for the year ended 31st August, 1918, to be submitted at the ordinary general meeting to be held on Wednesday, 29th January, states that the company's property holdings, after deduction of sales in freehold, are:—Witbank, freehold, 2,398 morgen; Joubert's Rust, freehold, 1,042 morgen; Uitspan, freehold, 225 morgen; portion of Blesboklaagte, mineral rights, 504 morgen; total, 4,169 morgen, equal to about 8,824 English acres. The company also owns the township of Witbank. The despatches from the mine reached a total of 907,738 tons, being an increase of 20,407 tons upon that of the preceding year. The working profit for the year amounted to £99,370 11s. 11d. This amount, together with the balance of £69,578 17s. 11d. unappropriated at the commencement of the year, making a total of £168,949 9s. 10d., has been dealt with in the appropriation account as follows:—Expended on capital account: Equipment, £6,028 0s. 1d.; less sale of mineral rights over 1 morgen 441 square rods on Farm Blesboklaagte No. 311, £1,900; sale of freehold stands, Witbank Township, etc., £2,086; amount previously appropriated for tree planting, now transferred from capital account to liquid assets, £794 17s. 9d.—£4,780 17s. 9d.; Government taxes, £7,888 19s.; dividends Nos. 26 and 27, £57,750; balance unappropriated, represented by cash and cash assets, less liabilities, £102,063 8s. 6d.; total, £168,949 9s. 10d. The balance is made up as follows: Shares and interests in co-operative concerns, £4,019 8s. 10d.; stores and materials, etc., £20,589 12s. 8d.; sundry debtors and payments in advance, £28,763 4s. 5d.; net cash, after allowing for liabilities, £48,691 2s. 7d.; total, £102,063 8s. 6d. During the financial year the Witwatersrand Native Labour Association, Ltd., purchased from this company the mineral rights underneath a piece of ground in extent 1 morgen 441 square rods on the farm Blesboklaagte No. 311, the surface rights of which the Association had acquired as a site for a depot. The purchase consideration was £1,900, a condition of the sale being that the Association should have the right at any time within ten years from the 22nd September, 1917, to return the mineral rights and site in the same state and condition as existed at the date of the sale against refund of the price paid. Two dividends, Nos. 26 and 27, of 12½ per cent. and 15 per cent. respectively, absorbing £57,750, were declared by the board during the year. In accordance with the Trading with the Enemy Act, 1916 (Union of South Africa), the amounts due to Enemy shareholders in respect of dividends Nos. 25 and 26 have been handed over to the Custodian of Enemy Property.

CONSULTING ENGINEER'S REPORT.

The consulting engineer writes:—The coal of all classes despatched during the year amounted to 907,738 tons, an increase of 20,407 tons on the previous year's total. Working time was again badly broken, an equivalent of only 236 full shifts for both pits having been worked during the period. Efficiency, of course, must suffer under these conditions of broken time, but the causes of the interruptions are mainly not within the control of the mine management. At both pits, development has been maintained well in advance of mining requirements, and the coal disclosures continue of the usual high standard quality and of good thickness. The general position, therefore, remains very sound.

MANAGER'S REPORT.

The manager writes:—Despatches: Detailed schedules are submitted giving the monthly despatches. Witbank section: Machinery and plant: The screening and generating plants have been thoroughly well maintained. It was found necessary to instal one new 250 h.p. boiler. A new blacksmith and truck repairing shop has also been erected; this addition has materially improved the efficiency in this department. Mine: The main seam continues to open up well and throughout the mine carries satisfactory calorific values. Conditions have improved in the eastern section. I fully expect to recover a considerable tonnage

from this area. 5,500 feet of 6 in. compressed air column has been installed. The improvement in the coal-cutting efficiency has fully justified the expenditure. Development is well advanced and has proved the quality and thickness of the seam to be well up to standard. Uitspan section: Machinery and plant: The plant has run satisfactorily during the past year. A small additional conveyor has been installed and minor alterations carried out to improve the method of handling the waste product. Mine: Development has been advanced well ahead of the working faces and shows the quality and the working faces to be well maintained. The electric coal cutters continue to be efficient under varying conditions. The mine generally is in a most satisfactory condition. General: The employees have responded well to the call for active service. I regret, however, to state that Lieut. A. Martin, M.C., one of the officials, G. N. Taylor, miner, and W. J. Ward, trammer, were recently killed in action. I wish to place on record my appreciation of the willing and efficient way the mine staff have worked during the past year.

PERSONAL.

The list of certificates issued by the Mines Department for the month ending 30th November is as follows:—Mine Overseers' Certificates (Metalliferous): C. Dames, C. C. C. Fagan, D. McLeish, N. Rowe, L. A. van Heerden. Mine Surveyors' Certificate: W. Allen. Mechanical Engineers' Certificates (Works): J. H. Bower, D. P. Millard, P. J. Rosevear, M. B. Senéque, A. R. Walsh. (Mines) C. E. H. Denman, G. H. Edgecomb, E. Grafton. Electrical Engineers' Certificates (Mines): A. G. Anderson, H. R. Bevington, E. H. Boyce, C. Davies, G. Fletcher, T. Henderson, M. C. le Lean, J. Reekie, G. H. Seldon, A. E. Spiers, W. A. Wade. (Works) A. S. Thomsen. Assayers' Certificates: R. E. Barker, H. R. C. Wood.



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SOME QUESTIONS CONCERNING KIMBERLEY DIAMONDS.

Valuable Treatise on the Long-Standing Problems of the Industry.

THE Royal Society of South Africa has recently published a lengthy paper, running to 32 pages, on "Kimberley Diamonds: Especially Cleavage Diamonds," by Dr. Sutton. The author has been fortunate in the important respect of having been able to study the subject on the spot, and to test by personal observation and experiment on an enormous mass of material any point that might arise, rather than of having to trust to mere hearsay. The paper ranges widely, giving statistics, from a scientific standpoint, of size and quality of the diamonds won from the different Kimberley mines, how these vary with depth of working, and how one mine differs from another. As an illustration of this last point we may quote some particulars from the paper of what each mine does in the way of producing large diamonds of, or exceeding, 10 carats each in weight: In every 100,000 carats of all sizes produced by each mine the number of large diamonds is:—

Bultfontein	65
Wesselton	140
Kimberley	684
De Beers	674
Dutoitspan	850

Now the average sizes of these large diamonds are:—

Bultfontein	14.9 carats.
Wesselton	15.5 carats.
Kimberley	17.0 carats.
De Beers	18.2 carats.
Dutoitspan	20.0 carats.

And the ratios of the total weights of large diamonds to the total productions are:—

Bultfontein	0.97 per cent.
Wesselton	2.32 per cent.
Kimberley	11.65 per cent.
De Beers	12.25 per cent.
Dutoitspan	17.02 per cent.

"Thus," comments Dr. Sutton, "diamonds exceeding 10 carats each in weight are relatively infrequent at Bultfontein, and average small; whereas upwards of one-sixth of the Dutoitspan yield consists of stones averaging 20 carats each. This is remarkable seeing that these two mines are so close together that they could even be worked (though perhaps not very profitably) from the same main shaft, and possibly have some underground connection. Comparing one mine with another the rule is essentially: The greater the average size of diamonds exceeding 10 carats each, the greater the ratio of their total weight to the total production, and the greater their number in every 100,000 carats produced. Kimberley Mine deviates slightly from the rule in the second particular."

In section 7 of the paper we get an account of the wonderful "stewartite," a kind of bort first recovered from the magnetic separators at the Pulsator by Mr. Stewart, and afterwards determined by Dr. Sutton to be genuine diamond, and yet to possess polar properties like the lodestone. "It is of a steel-grey colour, with a dull steely sheen, and is more fibrous in texture than other types of bort. In hardness it equals the diamond, but its specific gravity is rather less.

It is a good conductor of electricity, like other borts. Its most remarkable property, though, is that it is magnetic and polar, and thus it has an important bearing on Crookes's theory that diamond has separated out from molten iron. Being magnetic, it must contain iron; and because it contains iron and carbon in association and is polar, we might almost call it a steel bort." Dr. Sutton calls this stewartite the most interesting and most important member of the always interesting bort family.

The main theme of the paper is cleavage diamonds. Why are diamonds so often in fragments? Various reasons have been proposed, e.g. (1) that they get broken in the mining machinery; (2) that the broken fragments owe their condition to violent eruptive outbursts in the diamond pipes in past ages; (3) that certain classes of diamonds break of themselves. Dr. Sutton does not deny the possibility of any or all of these processes as operating causes to a relatively minor degree, but prefers, nevertheless, to believe that mineral inclusions are mainly responsible. Diamonds have always crystallised freely about other minerals, as well as about other diamonds, with disastrous consequences in the long run. The author scents the idea that diamonds burst. He claims to have met plenty of people who have heard of brown or smoky-looking diamonds having exploded to pieces, though nobody who has actually seen such a disaster, and he appears to attribute the belief in such a thing to an ancient tradition based on lack of observation. As the paper seems to prove, brown diamonds do evidently show a tendency to break up, although not according to the argument, by bursting. Do diamonds grow? Native Indian diamond diggers used to say that a given quantity of diamond gravel could be depended upon to reproduce its diamonds every 15 years. So far as the Indian gravels were concerned they were easily proved wrong; but that there can be growth when conditions are favourable is proved all right by the structure of South African diamonds. Dr. Sutton adduces in this connection the accretionary form of Bultfontein and Wesselton diamonds, and instances sundry cases such as the crystallisation of one diamond about another of different colour, and of one about another that had previously suffered much wear and tear. He adds that accretionary structures are common in mines where diamonds are most numerous. The shape of a diamond, rounded, or angular, or what not, he regards as dependent upon the colouring matter it contains; thus yellow diamonds are mostly rounded; bright yellow macles are uncommon, even in mines where yellow diamonds abound; ordinary grey bort runs to cubes and spheres.

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THE SECRETARY FOR MINES ON POST-WAR PROBLEMS.

Important Statement Made at Manufacturers' Conference.

SPEAKING last week at a conference of manufacturers, Mr. H. Warington Smyth, Secretary of the Department of Mines and Industries, made a number of statements of considerable importance and interest. He said the end of the war had placed the country in a position industrially which it had never held before. We were at a point where a great deal depended on ourselves. We were on the verge of and were looking forward to the rapid return to normal conditions. There were no data to place before them at present which would tell them in what guise they would return. For many months to come we should have to work much on the same basis as before. The priority system in regard to most restricted articles from Great Britain would continue for some considerable time. There was, at the same time, an indication that certain classes of iron and steel production would be obtainable at less than heretofore. As regards American shipping, we were told that controlled shipping would be reduced in the immediate future. Uncontrolled shipping would probably be controlled to some greater extent than during the past six months. There were certain causes in Europe and the Northern Atlantic which made for the continuation of our present conditions up to a certain point. They would see that the food scarcity in Europe was very marked and the Allies were undertaking to supply food to a large extent, which meant shipping requirements.

TRANSPORT REQUIREMENTS.

There would be a large requirement of shipping for troop transport and passenger transport too. Liner tonnage had been very seriously reduced and liner tonnage to-day was very short. All these circumstances must be taken into consideration, and further it must be remembered that many ships to-day urgently required overhauling. On the other hand they had large building programmes, which would result in improving the position from month to month. How soon that position would be satisfactorily met, they could not say, but there was no doubt with the American programme and our own that a steady improvement could be looked for. From these factors they must draw their own conclusions, but they hoped for a speedy improvement of the position.

TRADE COMPETITION.

Mr. Warington Smyth went on to refer to the European competition, which was coming, but reminded his listeners they had a number of months to prepare for that competition. With regard to the question of Union trade with other parts of Africa during the past four years, the Union had built up a steady trade with all the neighbouring territories of Africa. That trade had been gradually built up and we had become the distributing centre, and the Government Export Department had become more and more busy coping with that trade. We ought to try to keep that trade, and with that view in mind the Department had had instructions from the Minister to reduce the restrictions on exports to these territories gradually, but as rapidly as possible having regard to Union stocks. The whole object of the Department had been to conserve all necessary stocks. It had been found that certain articles were going out at a great rate to certain territories, with the result that we were left short. The Department immediately placed restrictions on such articles, and the result had been satisfactory. Cement production to-day was insufficient for our urgent requirements—railways, irrigation schemes and necessary works. Yet they had large demands for it. It had been the Department's duty to conserve our own supplies while letting out a certain amount for necessary operations. The Government had appointed a Commission to investigate and report on the trade possibilities of the East African territories. A big body like this Association could not afford to overlook these aspects of the work of the Government Department on the question of distribution to other portions of Africa.

VERY IMPORTANT.

The question would come to be a very important one in the future development of their industries, and the Department would do all it could to make more of holding the footing which had been gained in this trade. In this question of distribution we might have to consider the question of establishing free ports where they could load and re-load ships for distribution purposes to those ports with which they had a regular trade. It seemed to him in order to compete with Overseas shipping lines, it might be their duty to look into the question of establishing two or three free ports on the two sides of Africa—the question might be one of supreme importance later on.

THE FACTORY ACT.

Mr. Warington Smyth went on to speak of the Factory Act. It was, he said, intended to bring the Act into force on January 1, but owing to the epidemic they had had to postpone the date till March 1. It was hoped to have inspectors by the beginning of February. Under the Act, every factory had to be registered within six months of the Act coming into force, but this time might be extended in certain circumstances. It was hoped to appoint a class of inspectors who would at least be judicially minded. With regard to hours laid down, on the whole they conformed generally with the hours in force in most of the factories in this country. As to those who might find the hours rather short, he would point out that short hours were conducive to the greatest efficiency. Long hours were a relic of the past.

POOR WHITE PROBLEM.

Mr. Warington Smyth next touched on the labour position of unemployment, or as it is often called, "the poor white problem." Such problems, he said, could only be met by industrial expansion, and there must be adequate education for the rising generation. We would never clear out that poor white class by taking immediate action. We must build up a market for competent men by giving the rising generation every opportunity to become competent. Apart from the question of labour colonies, which was merely "biting at the thing" we were trying to do, we must try and do something for the control of children after they left school, and the Advisory Board were endeavouring to work in this direction. In paying a tribute to the Advisory Board of Industries and Science, Mr. Warington Smyth said the Board was doing important work in regard to getting surveys of raw materials. Till we get our industry well on its legs, and till we produced our own steel, he would not be happy.

PETROL POSITION.

Regarding the petrol position, Mr. Smyth said that the committees at Pretoria and on the Witwatersrand will be dissolved at the end of December. It is pointed out, however, that economy is still essential. The output will have to be restricted for some time to come, as stocks will not permit of normal consumption until further shipments are in sight. The distribution for the next few months will be regulated by the importing companies in consultation with the Controller of Imports.

New Kleinfontein.

The details of the operations on the New Kleinfontein for November are as follows:—Stamps, 165; days run, 23; tube mills, 8; tons milled, 46,440; gold recovered, 14,647 fine ounces; net value, £60,785; loss, £2,633; working costs per ton (excluding development), £1 4s. 4d.; development to working costs per ton, 3s.; total working costs per ton, £1 7s. 4d. Capital expenditure, £1,690. Results adversely affected owing to a large number of natives returning home as a result of influenza and by a fall of rock in the east subsidiary shaft, which is now repaired.

THE PROBLEM OF NEUTRALIZATION OF ACID WATER.

[By a Special Correspondent.]

REGARDING the problem of the neutralization of acid water which has to be contended with in our mines, a problem which to-day has not yet been solved in a satisfactory manner, there seems to have been overlooked a very valuable agent which promises to prove much more successful than the present use of lime (CaO) or carbonate of soda (Na_2CO_3). The agent to which I refer is magnesia (MgO). There are immense quantities of magnesia to be found in the Transvaal and up to the present the sources of supply have only been worked in a small way. This magnesia is being used by several Johannesburg firms for the production of carbonic acid (CO_2) and the calcined magnesite, which is the residue after the production of carbonic acid, is used in the manufacture of Epsom salts. In using magnesite as a water purifier, the following facts may prove interesting: The following are the combining weights (taking them all as monad) of: Sulphuric acid (H_2SO_4), 49; lime (CaO), 28; carbonate of Soda (Na_2CO_3), 53; magnesia (MgO), 20. This shows that the theoretical amount of the alkalis required to neutralize 49 parts of sulphuric acid are: Lime, 28 parts; carbonate of soda, 53 parts; magnesia, 20 parts. It will be seen that in theory the magnesia is considerably more efficient, weight for weight, than either lime or soda. In practice this superiority is even more marked. Although theoretically lime is nearly twice as efficient as soda, it has been found in practice the soda is superior to lime, owing to the greater solubility of its product with sulphuric acid—sulphate of soda or Glauber's salt has an additional advantage over lime owing to this solubility of its product; it does not precipitate and thereby choke pipes, etc., as the almost insoluble sulphate of lime (gypsum) does. The advantages of magnesia over lime are the same as those of soda, the sulphate of magnesia formed being very soluble; it has also an advantage over soda, magnesia being very insoluble in water, whereas carbonate of soda is readily soluble causing loss in working. This advantage is very apparent in practical working when a considerable excess of magnesia can be used to insure the complete neutralization without troubling to make careful tests of the acidity of the water, and this without any appreciable loss of magnesite. If the neutralization is carried out by causing the acid water to flow through a bed of calcined magnesite in lumps of suitable size, the work could be entrusted to an unskilled white man or even a native without any danger of either of incomplete neutralization or loss of magnesia, it being merely necessary to replace the magnesite as it is dissolved away, whereas when an excess of soda is used this excess is lost owing to its being dissolved unchanged and carried away. In addition to this it will be noted from the combining weights that magnesia is more than 2½ times as effective as soda and as in practice 75 per cent. carbonate of soda is found more

efficient than lime, it follows that calcined magnesite which can be easily obtained of a purity of from 90 per cent. to 95 per cent. is more than three times as effective as lime. Calcined magnesite has another great advantage over crude carbonate of soda, inasmuch as it can easily be obtained practically free from organic impurities, while crude soda contains these to some considerable extent, and it is a well-known fact that even small quantities of organic matter in cyanide solutions interfere with the precipitation of gold in the extractor boxes. Calcined magnesite readily combines with Sulphuric acid even in dilute solution as the attached experiment shows. The advantages of magnesite may be summed up as follows:—Advantages over lime: (1) Over three times as effective (in practice); (2) does not choke pipes, etc. Advantages over crude carbonate of soda: (1) Over three times as effective (without considering the loss of soda due to its insolubility); (2) free from organic impurities; (3) more easily used. The following is the result of an experiment in neutralizing acid water, with calcined magnesia:—An aqueous solution of sulphuric acid was made up containing 0.05 per cent. H_2SO_4 . This being an approximate reproduction of a sample of water from a local colliery recently tested. This solution was run through a bed composed of 10 grammes of calcined magnesite in pieces from ¼ in. to ½ in. diameter at the rate of 3.5 litres per hour. After passing through the magnesite the water was found to be faintly alkaline.

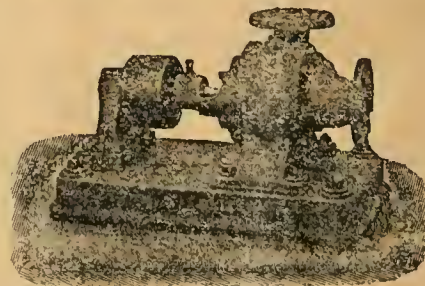
Another Iron Foundry.

The Newcastle Town Council have been approached with a view to the selling of certain of the town lands for the establishment of a smelting iron works. The acreage required is 150 acres and this has been applied for by Mr. J. K. Eaton, of Johannesburg. The Council have agreed to the selling of these town lands at 10s. per acre with certain reservations regarding trading rights. The applicant is prepared to put up plants within 12 months to the value of £25,000, and the estimate of wages each month will amount to approximately £1,000. Certain facilities in respect of the water supply from the river are given, and for domestic use 6d. per 1,000 gallons will be charged, plus the cost of the connection of the main water supply. Terms have already been submitted for the consent of the Administrator by the Corporation, and the purchaser will have the right to transfer to a company, and also to deal with prospective applicants who wish to take stands in this part for the purpose of introducing and working up other allied industries, such as making agricultural implements from the pig iron.

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PRESENT-DAY INDUSTRIAL PROBLEMS AND THEIR SOLUTION

Some Points from a Notable Address by Mr. W. L. Hichens.

AN interesting address on "Some Problems of Modern History" was recently delivered by Mr. W. L. Hichens, chairman of one of the most important Reconstruction Commissions in England, before the Watts' Institute. Dealing with the question of profits, the speaker said: No business is entitled to make unlimited profits. The present theory is that the residuum, however large it may be, after defraying costs of production, should go to capital. This, I submit, is unsound. Labour, the entrepreneur class, capital and the consumer, are all partners in the business of the community, and no one class is entitled to benefit unduly at the expense of another. The principle of the profits tax should therefore be retained after the war. The present tax, of course, was intended as a temporary measure, and a standard of profits based on pre-war earnings is quite unsuited to permanent conditions. It would be necessary to fix a standard rate of interest for the capital invested in each class of trade or industry, and a proportion (I suggest a substantial one) of any excess profits over that standard should accrue to the State. In any such scheme it would be necessary to provide that adequate allowances are made for depreciation and for reserves to secure the stability and development of business. The wholly inadequate provision for depreciation allowed under the income tax regulations to-day has, I believe, done serious injury to the industries of this country. It has encouraged over-capitalisation; it has hampered the scrapping of old and the substitution of modern machinery; it has given us a retrograde in place of a progressive standard. It would be easy to spend the whole of my allotted time in discussing the arguments for and against this proposal, but I must content myself with the observation that effect must somehow be given to the principle that no section of the society is entitled to an unlimited share of the wealth of the community, that free competition has proved an impossible solution, and that profit-sharing with the State, which is what, in the effect, an excess profits tax is, is more equitable and more expedient than other forms of profit-sharing.

LABOUR'S DUTY TO THE STATE.

It follows secondly that, just as capital is not entitled to an unlimited reward, but must be checked by State action, so also the reward of labour must, in the last resort, be determined by the State, as representing the community. Labour has no more right than capital to make a corner in its own commodity and hold the community up to ransom, and it, too, must bow to the will of the State. In practice it is clear that the tendency will develop for wages to be settled by joint industrial boards representing employers' and workers' organisations, but in the event of disagreement, or collusion to exploit the community, the State must have the right of intervention. It is not fitting that any party should be the final judge in its own cause, and any such claim, if successful, will inevitably lead to the disintegration of society. For the community will be divided into a number of groups each fighting for its own hand, private gain will rise superior to the public good, the fundamental law of social life will be broken, and the eternal truth will be verified that a kingdom divided against itself cannot stand. I recognise that a large section of the community is not, to-day, prepared to accept the principle of State intervention, and I recognise also that unless it appeals to the moral judgment of the great majority of the nation it cannot be enforced, and ought not to be enforced. The important thing to-day is that the verdict of public opinion should be sought.

THE STATUS OF LABOUR.

The principle of national service requires thirdly, I submit, that the status of labour as a whole should be raised. The workers are clearly entitled to have an effective voice in regard to the general conditions under which their work is carried on. They are vitally interested in all questions,

for example, affecting wages, hours of labour, apprenticeship, demarcation of work, decasualisation, and they have an equal right with employers to assist in the determination of these problems. The general acceptance of the proposals for Joint Industrial Councils contained in the Whitley Report is good evidence that public opinion will support the demand of labour for an improved status. If its voice is to be at all effective it follows that, as suggested in the Whitley Report, District Councils and Works Committees must be established to deal with local questions, and to ensure that whatever is agreed to by the Central Councils is carried out locally. The more highly organised employers' associations and trade unions have already advanced far along the lines of the Whitley Report, but much has to be done in determining precisely the powers and functions of these joint central and district bodies.

THE VALUE OF INITIATIVE.

Unrestricted competition is an evil, but its complete elimination spells stagnation; for a healthy rivalry between one type of organisation and another, and between one firm and another, is the life-blood of efficiency. Hence, subject to the observance of the general policy and conditions of industry, I think that each business should be organised on whatever lines seem best to those who are responsible for its direction. I do not agree, for example, with the suggestion so often made, that the power of dismissal is too big a responsibility to be exercised by any single employer, and that there should be a right of appeal to some outside body. I admit to the full the evils of insecurity of tenure, and hold that every effort should be made to remove this nightmare of uncertainty which oppresses the wage-earning class. But the root cause of it is, not the right of the management to employ whom it pleases, but the fluctuation in supply and demand, which can never be wholly controlled, although much more can be done than has ever been attempted.

UNEMPLOYMENT AND INSURANCE BENEFIT.

Meanwhile, it is clearly right that the evils of unemployment should be mitigated by a wide extension of unemployment insurance benefit. Division of labour is essential to the organisation of modern society, it is required in the interests of the community as a whole, and unemployment should be administered from one central fund. It is reasonable that each worker should contribute a percentage of his pay, and each firm a proportion of its wages bill to the fund, but it is reasonable, also, that the general public should contribute. To regard each industry as a separate unit, with a separate financial responsibility, would, I believe, be a serious blunder, tending to restrictions of interchange similar

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to those brought about by the laws of settlement and the apprenticeship laws of the 17th and 18th centuries. But, given an adequate system of unemployment benefit, I submit it is vital to the success of industry that those responsible for the management of a business should be entitled to select their own employees. The secret of success in business lies very largely in the wise selection of men, and, if that responsibility is taken away from the management a blow will be struck at the very roots of our industrial supremacy.

SHORTER HOURS.

I come now to the fourth point in the application of the general principle of national service, and it is, strictly speaking, rather a necessary preliminary to, than a consequence of, the principle. I refer to the question of the reduction of hours of labour, which I venture to think is one of the most important problems awaiting solution. Under modern conditions, very large numbers of men and women are engaged on work of unalloyed drudgery, and the progress of specialisation and automatic machinery, which is inevitable, will increase rather than reduce the monotony of labour. Leisure hours, therefore, become of increasing importance, for man is not a mere machine; he is by nature many-sided, and his different faculties must be given an opportunity for development and expression in any really healthy community. The idea of the leisured classes and the toiling masses is monstrous; it is just the toiling drudge who needs leisure most—leisure for recreation, and refreshment leisure for education—above all, the leisure for education. For education is not something which ceases with boyhood; the roots only are planted in early youth; the flower and the fruit ripen in after life, and how can they ripen if they are choked by the dense jungle of drudgery? How can a man understand the meaning and beauty of life, how can he feel inspiration of patriotism, if he sees the world only through the clouded spectacle of drudgery?

STRIKES UNHEALTHY EXCRESCENCES.

If all strikes can be prevented and regarded, as they should be, as the unhealthy excrescence of a semi-civilised age, the addition of our national wealth will be very great. An average of 18 million working days per annum were lost owing to trade disputes in the four years before the war, to which must be added the indirect losses involved by the dislocation of industries not primarily affected. But an even greater gain will be made if the policy of restricting output is abandoned. The loss that falls upon the community owing to "slow timing" and indifferent workmanship is an oft-told tale, and I will not dwell on it. But disastrous though the policy is to the workers themselves, as well as to the rest of the community, we shall, I believe, be indulging a vain hope if we think it will be abandoned so long as the theory holds the field that capital is entitled to the residuum of profit after the costs of production have been defrayed. Unless it is made unmistakably clear that industry is run for the benefit of the whole community, and not for the enrichment of certain classes, restriction of output will continue, and the reforms that are so urgently needed will be sadly hampered. Similar in kind—and far less excusable—is the loss that falls upon the community owing to the existence of able-bodied drones, rich or poor, who contribute nothing to the common stock, but live in idleness upon the fruits of other men's toil.

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SPEED PRODUCTION BY MODERN MACHINERY.

A third important factor in improved production is the substitution of up-to-date machinery for old, and the extension of labour-saving devices. Before the war, it often happened that it did not pay to introduce labour-saving devices, because, apart from the difficulty of raising fresh capital, the interest charges came to more than the cost of cheap manual labour. If the industries concerned could not bear the extra charge, as was the case in many sweated industries, the consumer was at fault, because he was paying too low a price for the commodity, and State intervention was justified. For it is clearly in the general interest that machinery should be substituted for hand labour wherever practicable, just as it is a social duty to secure that no one is paid a wage below what will support a civilised existence. In fact, the latter cannot be secured without the former; for it is machinery which frees us from the unremitting toil that the winning of our daily bread otherwise demands. But just as we have been backward in substituting mechanical devices for unskilled labour, so we have been slow to replace antiquated with modern machines. In both cases want of capital, cheap labour, and the opposition of the workers have stood in the way. This opposition on the part of those who may be thrown out of a job is not unnatural, and must be met partly by extending unemployment benefit, as indicated above, and partly by special provision to safeguard the interests of those displaced.

OBSTACLES TO BE OVERCOME.

But it would be a mistake to suppose that the opposition to the reforms involved in the introduction of improved mechanical devices and improved organisation comes from the workers alone. Vested interests play an even more powerful part in thwarting progress, and ingrained habits present a formidable obstacle to far-reaching schemes of reform. It is essential, however, that all difficulties should be overcome, for the possible economies are enormous. Let me give a few examples taken at random. One of the paramount necessities of this country is cheap transport, and

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attention must be concentrated on reducing railway rates. Can anyone doubt that by standardising our locomotives and wagons; by establishing central coal depots; by concentrating our goods yards; by substituting electric traction for locomotives in which only 15 per cent. of the original energy is utilised; by eliminating wasteful competition; can anyone doubt that, by a far-sighted scheme of reform, a vast field of economy may be opened up in the administration of our railways? Or, again, take the transfer of landed property. A simple and cheap method of land transfer is of great importance to a progressive community. And yet it would be hard to find any country where the system is more cumbersome or expensive. It is estimated that over £4,000,000 a year is spent in lawyers' fees alone under the present system, whereas a scheme of universal registration would be cheap, simple and expeditious.

WASTE IN INDUSTRIAL COMPETITION.

There is one further instance of wasted effort to which I should like to refer briefly, because I believe it is of far-reaching importance. I mean the waste involved in unrestricted competition. Certain forms of competition are healthy and cheapen production, but others are sadly wasteful. The rivalry in commercial production—so long as wages, hours, and general conditions of work are safeguarded—seems to me healthy, and I believe that it is better for a country to have a large number of small manufacturers than a few big trusts; this also accords more with the genius of our race, whose sturdy independence and self-reliance has built up an Empire containing a quarter of mankind. Nor do I believe that the economies resulting from manufacture on a gigantic scale are very great. It is necessary, of course, that an economic unit of production should be established in each case, but the economic unit is not necessarily large.

For example, many small firms have proved that they can manufacture shell at least as cheaply as the largest organisations. A great source of wasted energy to-day is that so many manufacturers are engaged in a miscellaneous trade, with no economic standards. A dozen firms may each be manufacturing a dozen types of articles at a loss, whereas, if each concentrated on one type, the loss would be converted into a profit. Moreover, standardisation of types has been sadly neglected, and quite unnecessary variations have been allowed to intrude themselves, merely because it is nobody's business to see that they are reduced to a minimum.

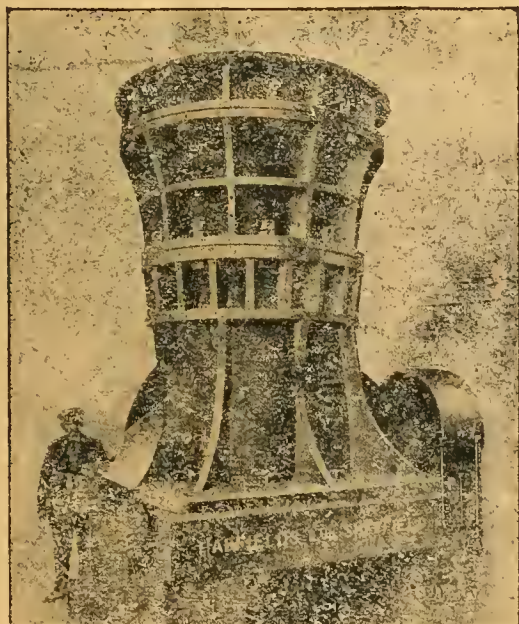
SELLING ORGANISATIONS.

But big selling organisations are undoubtedly, I think, more economical than small ones. What is wanted, therefore, I suggest, is big selling combinations, which should also promote research work, and a variety of manufacturing units. The money that is wasted every year in advertising, in travellers, in touting for orders by means which are often degrading, in over-production, runs into enormous figures. But the remedy of syndicating the producing of each industry is, I admit, full of difficulty; it tends to stagnation, to the exclusion of newcomers, and to inflation of prices; for the evil of rings in the past has been that they have thought more of keeping prices up than of cutting costs down. The principle is not, of course, immediately applicable in all industries, but it might be applied at once, with great advantage, to many of the standardised trades, and it might be encouraged where it already exists. Otherwise it will be impossible for British industry to hold its own abroad against the big trusts and cartels of other nations, and, what is even more important, it will be impossible to take effective action to prevent over-production.

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THE NOVEMBER GOLD OUTPUT IN DETAIL.

Lowest Return for the Year—Some Notable Decreases.

DURING November the Transvaal mines produced 658,701 ozs. of fine gold, valued at £2,797,983, as against 679,764 ozs., value £2,887,455, in the longer month of October, a decrease of 21,063 ozs., value £89,472. The November output is the lowest monthly return for the year, being 1,058 ozs. less than the total for February. Owing to the influenza epidemic the operations of the Transvaal gold mines in November were affected by a serious decrease in the supply of native labour. This caused a decrease in the tonnage milled, with a consequent increase in costs and fall in profits. The group profits for November amount to over £50,000 less than those declared for October. The disease is on the wane in the Union native territories, and natives are beginning very slowly to come forward again from those parts. It is, however, still raging in Portuguese East Africa, and recruiting there may have to be discontinued for a month or so. The number of natives employed on the gold mines on the last day of November was 160,275, compared with 173,153 in October, showing a loss of 12,878 boys. The output figures for November as compared with those for October were declared by the Chamber of Mines this week as follows:—

WITWATERSRAND.

	Ozs.	Value.
October	667,955	£2,837,294
November	640,797	2,721,932
Decrease	27,158	115,362

OUTSIDE.

November	17,904	76,051
October	11,809	50,161
Increase	6,095	2,589

GRAND TOTAL.

October	679,764	2,887,455
November	658,701	2,797,983
Decrease	21,063	89,472

The following Rand companies show an increase for November: East Rand Proprietary Mines, £10,861; Roodepoort United, £2,854; Robinson, £2,621; City and Suburban, £2,439; Bantjes, £2,107; Knights Deep, £2,085; Robinson Deep, £1,959. The outside districts' total of £76,051 includes gold produced by the Transvaal Gold Mining Estates in October valued at £25,482.

STAMP POSITION.

The total number of stamps dropping on the Transvaal goldfields in November was 8,704, as against 8,694 in October, an increase of 10.

	Rand.	Outside.	Total.
October	8,479	215	8,694
November	8,464	240	8,704
Increase		25	10
Decrease	15		

LABOUR FIGURES.

The native labour figures for the past three months are as follow:—

	September.	October.	November.
On gold mines	179,399	173,153	160,275
On coal mines	12,108	11,824	11,826
On diamond mines	4,889	4,749	4,016
	196,396	189,726	176,117

INDIVIDUAL RETURNS.

	Value.	Increase.	Decrease.
Aurora West	£12,624	—	£1,419
Bantjes Consolidated	25,724	£2,107	—
Brakpan	80,507	—	1,241
City and Suburban	33,413	2,439	—
City Deep	88,731	—	3,428
Con. Langlaagte	47,906	—	2,395
Con. Main Reef	62,985	—	6,814
Crown Mines	188,620	—	18,168
Durban Deep	38,399	—	119
Durban Roodepoort	—	—	302
East Rand Proprietary	142,630	10,861	—
Ferreira Deep	59,252	—	713
Geduld Proprietary	60,794	—	853
Geldenhuis Deep	54,978	—	2,855
Ginsberg	12,599	—	1,308
Glencairn	9,885	—	1,703
Government Areas	187,274	—	12,909
Jupiter	24,841	—	2,149
Knight Central	27,122	—	2,799
Knights Deep	65,572	2,085	—
Langlaagte Estate	56,291	—	3,228
Luipaardsvlei	18,962	—	374
Meyer and Charlton	40,298	—	400
Modder B.	109,455	—	7,166
Modder Deep	84,092	—	2,868
New Goch	13,147	—	858
New Heriot	15,632	—	739
New Kleinfontein	62,217	—	10,976
New Modder	167,650	—	259
New Primrose	15,355	—	544
New Unified	11,800	—	421
Nourse Mines	45,791	—	7,696
Princess Estate	20,576	—	115
Randfontein Central	147,358	—	12,097
Robinson	42,749	2,621	—
Robinson Deep	54,694	1,959	—
Roodepoort United	22,275	2,854	—
Rose Deep	53,823	—	1,249
Simmer and Jack	55,985	—	314
Simmer Deep	40,460	—	5,874
Springs Mines	72,343	—	1,040
Van Ryn	33,816	—	2,337
Van Ryn Deep	94,932	—	3,573
Village Deep	53,050	—	4,987
Village Main Reef	26,548	—	2,256
West Rand Consolidated	26,994	—	4,231
Witwatersrand	35,851	—	1,864
Wit. Deep	31,454	—	3,653
Wolhuter	35,124	—	706
Miscellaneous	9,354	—	1,288

OUTSIDE DISTRICTS.

	Value.	Increase.	Decrease.
Sub Nigel	26,349	2,158	—
Barrett	943	144	—
Glynn's Lydenburg	1,096	—	4,235
T.G.M.E. (Oct.)	25,482	25,482	—
Do. (Nov.)	3,075	3,075	—
Miscellaneous	19,106	—	734

GROUP PROFITS.

	September.	October.	November.
Central Mining	£248,833	£252,873	£210,865
Barnato	200,879	170,688	159,347
Gold Fields	18,240	*4,126	*2,621
General Mining	26,400	17,992	17,266
Mines Selection	64,503	49,472	53,498
Union Corporation	63,457	63,666	62,232
Totals	£622,312	£554,691	£503,208

* Loss.

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THE NOVEMBER GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of November:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
Bantjes Cons. ...	90	3	21,000	6,056	£6,992 17/	3·9
City Deep ...	a154	10	46,500	20,889	15,893 30/	6·3
Con. Main Reef	220	6	41,700	14,828	3,026 28/	1·5
Crown Mines ...	660	26	134,000	44,274	15,537 25/	2·9
Dur. Rood. Dp..	100	3	25,300	9,040	2,002 28/	1·7
East Rand Prop.	600	23	112,000	33,578	12,054 22/	9·6
Ferreira Deep ...	280	7	33,950	13,949	12,592 26/	9·0
Geldenhuis Deep	300	7	45,300	12,943	*999 24/	2·5
Knight Central ..	120	3	20,500	6,385	778 25/	1·8
Modder B. ...	b104	8	56,300	25,768	51,244 19/	7·8
New Modder ...	c236	15	73,000	39,468	90,318 20/	2·8
Nourse Mines ...	180	5	34,500	10,780	*4,288 28/	5·6
Robinson ...	180	6	35,000	10,064	4,012 21/	7·4
Rose Deep ...	300	7	46,400	12,671	6,779 19/	9·4
Village Main R.	130	4	19,800	6,250	4,007 22/	2·4
Wolluter ...	120	4	29,270	8,269	4,319 20/	6·8
Village Deep ...	180	7	38,200	12,489	*7,164 30/	11·2
Wit. Deep ...	200	5	28,120	7,405	*6,237 26/	3·5

Tls. & averages 4154 149 840,840 295,106 210,865 24/ 2·1

a Includes 4 Nissen stamps. b Includes 24 Nissen stamps.

c Includes 56 Nissen stamps.

* Loss.

Bantjes Consolidated Mines.—The increased profit is due to a considerable reduction in working costs caused by the stoppage of all shaft sinking and development and general reduction consequent on the decision to close down the mine and works. A thorough clean-up is being made of the underground workings and surface accumulations. The breaking of rock in the mine was discontinued on the 30th November, and during December the remaining sweepings and broken rock in the mine will be treated and a thorough clean-up made of all gold in the reduction works.

East Rand Proprietary Mines.—With reference to the recent increase in the profits, it should be noted that during the last two months working costs have been relieved of a large expenditure on account of the curtailment of development operations in three important districts in order to prepare these districts for stoping. Development will be resumed when this work is completed provided the supply of native labour renders this possible.

Modder B.—Decreased profit due to temporary fall in grade.

On account of the influenza epidemic operations of all companies generally have been affected by a serious decrease in the supply of native labour. This has caused a decrease in the tonnage milled, and consequent increase in costs. The number of natives coming forward still continues to be insufficient to replace those taking their discharge. The disease is on the wane in the Union native territories, and natives are beginning very slowly to come forward again from thence. It is, however, now becoming severe in its incidence, but fortunately not in mortality, in Portuguese East Africa, the supply of labour from which up to now has been but little affected. In consequence of present position it is feared that recruiting in East Africa may have to be discontinued for a month or thereabouts.

Transvaal G.M. Estates.

No tonnage was treated in November at Elandsdrift or Vaalhoek, and only 475 tons at the Central Mines. The loss for the month was £6,336. A somewhat similar loss is anticipated for the month of December.

Barnato Group.

The results of operations of the Barnato group for November are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	36,600	£47,905
Ginsberg ...	75	11,800	12,599
Glencairn ...	160	11,350	9,885
Government Areas ...	180	100,000	187,273
Langlaagte Estate ...	200	44,260	56,292
New Primrose ...	90	17,000	15,355
New Unified ...	60	12,100	11,800
Randfontein Central ...	600	133,000	147,360
Van Ryn Deep ...	90	42,350	94,932
Witwatersrand ...	215	31,000	35,853

Totals and averages ... 1770 439,460 £619,254

October totals ... 1790 484,140 £659,293

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ..	£39,057	21·342	£9,019
Ginsberg ...	11,873	20·123	808
Glencairn ...	8,475	14·933	1,606
Government Areas ...	107,625	21·525	80,204
Langlaagte Estate ...	42,773	19·331	13,728
New Primrose ...	14,049	16·528	1,401
New Unified ...	9,633	15·922	2,208
Randfontein Central ...	152,370	22·913	*4,203
Van Ryn Deep ...	45,462	21·470	50,059
Witwatersrand ...	32,361	20·878	4,517

Totals and averages ... £463,678 21·102 £159,347

October totals ... £492,724 20·355 £170,688

* Loss.

Monthly Gross Profit for 1918.—January, £190,628; February, £159,225; March, £136,496; April, £164,186; May, £179,975; June, £180,141; July, £188,103; August, £186,284; September, £200,879; October, £170,688; November, £159,347.

Glencairn.—Includes revenue derived from gold recovered from final clean-up of portion of reduction plant.

Randfontein Central.—Loss mainly due to the epidemic and consequent native labour shortage.

Consolidated Mines Selection Group.

The following* are the results of operations for the month of November:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines ...	110	45,000	26/ 3·734
Springs Mines ...	80	32,000	24/ 6·159
Totals and averages ...	190	77,000	25/ 6·767

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines...	£80,252	35/ 8·010	£21,052	9/ 4·276
Springs Mines ...	71,667	44/ 9·506	32,446	20/ 3·347

Totals & averages £151,919 39/ 5·514 £53,498 13/ 10·747

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of November: Tons crushed, 540, yielding 258 fine ozs.; estimated value of month's output, £1,068; estimated loss for the month, £1,517.

Albu Group.

The November operations of the producing mines of this group were as follows:—

Company.	Stamps.	Tons Crushed.	Total Cost.
Aurora West	80	11,800	£14,619
Meyer and Charlton	75	13,000	15,860
New Goch	80	15,200	14,962
Roodepoort United	80	24,000	26,551
Van Ryn Estate	140	32,000	28,104
West Rand Consolidated	100	25,000	32,179
	555	121,000	£132,275
Company.	Cost per Ton.	Total Revenue.	Profit
Aurora West	24.78	£12,527	*£2,092
Meyer and Charlton	24.40	39,692	23,832
New Goch	19.68	13,971	*990
Roodepoort United	22.13	22,685	*3,866
Van Ryn Estate	17.57	33,648	5,544
West Rand Consolidated	25.74	27,017	*5,162
		£149,540	£17,266

* Loss.

The native labour position became still more acute during November with the effect of still further reducing the outputs of most of the mines of this group. Owing to prevalence of influenza epidemic in native recruiting areas, including Portuguese East Africa, outlook for December and January is very unsatisfactory.

Aurora West.—Additional stoping drills of jack hammer type have been ordered to counteract shortage of native hammer boys, and arrangements being made to obtain necessary additional compressed air.

West Rand Consolidated.—Results for November were seriously affected by suspension of operations at Rand shaft, owing to breakdown of pumping plant. Repair work almost completed but continued shortage of natives bound to affect operations until labour position improves.

Union Corporation.

Results of operations on the producing mines of this group for the month of November:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary	100	41,000	£61,881	30/ 2
Modder Deep Levels	70	41,000	83,901	40/11
Princess Estate	60	18,500	20,848	22/ 7
Totals	230	100,500	166,630	—
Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton.
Geduld Proprietary	£41,434	20/ 2	£20,447	10/ 0
Modder Deep Levels	36,228	17/ 8	47,673	23/ 3
Princess Estate	26,736	28/11	*5,888	6/ 4
Totals	£104,398	—	£62,232	—

The decrease in the native labour available particularly affected the Princess Estate Co.

* Loss.

Manicaland Output.

The mineral output of the territory of the Companhia de Moçambique (Manicaland) for the month of October, 1918, is as follows:—Reef: Mill: Gold won (fine), 64 ozs. 4 dwts. 9 grs.; tons crushed, 415; value, £266 3s. 8d. Alluvial: Gold won (fine), 438 ozs. 5 dwts. 14 grs.; cubic metres dredged, 34,920; value, £1,816 16s. 4d. Copper declared, 11.25 tons; value, £1,125.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of November of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs.	Total Profit
Simmer and Jack	320	7	48,900	13,180	£5,977
Robinson Deep	100	7	40,500	12,842	*3,000
Knights Deep	400	11	75,900	15,437	*5,330
Simmer Deep	220	10	42,400	9,525	*8,142
Jupiter	80	5	20,600	5,848	*801
Sub Nigel	30	2	9,100	6,203	8,475
Totals	1150	42	237,400	63,035	*£2,821

* Loss.

The sundry revenue included in the above total declared profit or loss is as under: Simmer and Jack, £1,500; Robinson Deep, £139; Knights Deep, £182; Simmer Deep, £387; Jupiter, £665; Sub Nigel, £9; total, £2,882.

Gold Reserve.—Simmer and Jack, 2,050 ozs.; Sub Nigel, 3,231 ozs.; total, 5,281 ozs.

The acute shortage of native labour seriously affected operations, except in the case of the Sub Nigel; and, in view of this shortage continuing, bad results are expected for the current month.

Rooiberg Minerals.

The following are details of the operations on the Rooiberg Minerals Company's property for November: Tons treated, ore 986, slime 1,177; concentrates produced, 25; expenditure, including realisation charges and exploration, £5,771; revenue, £3,973.

New Kleinfontein.

Appended are details of the operations on the property of this company for the month of November: Stamps, 165; days, 23; tube mills, 8; tons milled, 46,440; gold recovered, 14,647 fine ozs.; net value, £60,785; loss, £2,633; working costs per ton (excluding development), £1 4s. 4d.; development to working costs per ton, 3s.; total working costs per ton, £1 7s. 4d.; capital expenditure, £1,690. The results were adversely affected owing to the large number of natives returning home as a result of the influenza, and by a fall of rock in the east subsidiary shaft, which is now repaired.



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THE WEEK IN THE SHAREMARKET.

Weak Beginning—Firmier Close—Fall and Recovery of Modder East.

THE market was again dull on Saturday with a further lower tendency. The sales of Modder East three-year Options at 5s. and the four-years at 6s. is about low-water mark since the scrip was issued. At Monday's call, the majority of stocks were once more on the down grade, with a slight recovery in the Modder East trio. The main feature was, however, the sharp rise in Brakpans, which, from 67s. 6d. sales on Saturday, came 70s. buyers with business at 71s. immediately after the call and a buyer at 71s. 3d. City Deeps also improved their position from sales at 45s. to 46s. buyers. The market pursued its downward trend on Tuesday, the only gold stock showing any strength being Modder Deep, which has now reversed its position with Modder B. The latter was at one time leading by 20s. In other stocks Coronation Collieries, Alkalis and Hume Pipes were marked up. The late favourites, Knight Centrals, are fast getting back to their original level, and African Farms were decidedly weak. The market hardened during the course of the day and at the close the following improvements were noted: City Deeps, 45s. 6d., 46s. 3d.; Geduld Props, 37s. 3d., 38s.; Modder Easts, 19s. 9d., 20s.; three-year Options, 5s. 6d., 5s. 9d.; four-years, 6s. 9d., 6s. 10d.; the last three stocks with sales at the buying prices; Modder sales and sellers at 154s. 6d.; Government Areas sales and buyers, 90s. 9d.; Springs, 65s. 3d. buyers; Sub Nigels, 27s. 3d., 27s. 6d. The weak feature was Modder B. with sale at £7 11s. The Exchange was closed on Wednesday. At the opening on Thursday Van Ryn Deeps were sold at 71s, and Modder East Options (three-years) at 6s., but both were lower subsequently. Prices were steady at the call. Modder Deeps were a trifle easier, but for all that still ahead of Modder B. Modder East and their Options were better. The remainder mostly unchanged. The business in outside stocks during the past week consisted of:—Sales: Sakalavas, 6s.; Makganyene, 28s. to 30s.; Henderson's Options, 11d. and 1s.; Lydenburg Lands, 2s.; New Farms, 2s. 3d. Buyers and sellers: Phoenix, 11d., 1s.; Henderson's Estates, 5s. 6d., seller; Monteleos, 23s., 25s.

The market was dull on Friday morning. The following show the alterations in prices at the call:—Sales: City and Suburban, 7s. 9d.; East Rand, 5s. 9d.; Government Areas, 90s. 6d.; Knight Centrals, 5s. 11d.; Sub Nigel 5s. paid, 11s. 6d.; Alkalis, 41s. 6d.; Wit. Deeps, 13s. 9d.; Zaaiplaats, 15s. 3d.; Van Ryn Deeps, 70s. 3d. Buyers and Sellers: Clydesdales, 21s., buyer; Coronation Colliery, 50s., buyer; Dagga Options, 5s. 3d., sellers; Geduld Props, 37s. 9d., 38s.; Lace Props, 10s. 7d., 10s. 9d.; Modder B., £7 11s. 6d., £7 15s.; Modder Deeps, £7 11s., £7 12s. 6d.; Modder East three-year Options, 5s. 3d., 5s. 6d.; four-year Options, 6s. 7d., 6s. 9d.; Natal Navigations, 21s., 22s.; Consolidated Lands, 23s. 6d., 24s.; Wolluthers, 3s. 4d., 3s. 6d.

	Fri. 6th.	Sat. 7th.	Mon., 9th.	Tues., 10th.	Thurs. 12th.
African Farms	15 6*	15 6*	15 3*	15 1	15 2*
Apex Mines	7 0	6 0A	7 1	7 2	7 2*
Aurora Wests	—	—	8 6*	8 6*	—
Bantjes Cons. . . .	2 3	2 2	2 1*	2 1*	2 1*
Brakpan Mines	69 0	67 6	70 0*	70 0*	69 0
Breyten Colls. . . .	11 6*	11 0*	11 6*	11 6*	11 6*
Brick and Potteries . .	3 9*	—	3 9*	3 9	3 9*
British South Africa .	20 0	—	—	—	—
Bushveld Tins	—	—	0 8*	0 8*	0 8*
Cassel Coals	—	—	—	—	8 6†
Cinderella Cons. . . .	5 3*	5 3*	5 0*	5 6	—
City and Subs. . . .	8 3*	8 6	8 0*	8 0*	8 0*
City Deeps	46 6	45 0	46 0*	45 0*	45 9*
Clydesdale Colls . . .	20 0*	—	21 0*	20 0*	20 6*
Con. Investments . . .	21 0*	21 0*	—	22 0*	20 0*
Con. Langlaagtes . . .	17 0*	17 0*	17 0*	17 0*	—
Con. Main Reefs . . .	11 6	11 3*	11 4	11 4½	11 6

*Buyers. †Sellers. AOdd lots. BEx London.

	Fri. 6th.	Sat. 7th.	Mon., 9th.	Tues., 10th.	Thurs. 12th.
Con. Mines Sel. . . .	23 6*	—	23 9	23 6*	—
Coronation Colls. . . .	—	—	16 0*	17 6*	—
Coronation Frees. . . .	1 3	—	1 3*	1 3*	1 3*
Crown Dias.	4 0*	4 0*	4 0*	—	—
Crown Mines Deb. . . .	£100*	£100	£100*	£100*	—
Daggafontein Mines . .	24 0	24 0	22 6*	23 0*	22 9*
Do. Options	6 0†	—	5 9†	5 6†	5 6†
East Rand Coals	2 2*	2 2*	2 3	2 2*	2 3*
East Rand Deeps	0 11*	—	0 11*	0 11*	0 11
E.R. Minings	17 6*	—	17 6	—	—
East Rand Props. . . .	5 9*	5 6*	5 6*	5 6*	5 9A
Eastern Golds	1 8†	1 7†	1 7†	1 3*	1 7†
Ferreira Deeps	9 6A	—	—	—	—
Frank Smith Dias. . . .	3 7*	3 9†	3 9†	3 8†	3 6*
Geduld Props.	—	37 3*	37 0*	37 0*	37 6*
Glencoe Colls.	6 0*	—	6 0*	—	6 6*
Glynn's Lydenburgs . . .	22 6*	—	22 6*	23 0*	23 6*
Govt. Areas	91 3A	91 0*	90 9	90 3*	90 3
Jupiters	4 10	4 10*	4 9*	4 8*	4 11†
Klerksdorp Props. . . .	3 0*	5 0*	—	—	3 0*
Knight Centrals	6 6	6 6	6 5	5 11	5 9
Knights Deeps	7 0*	—	6 3*	6 6*	6 6*
Lace Props.	10 6*	10 6	10 7	10 6*	10 9
Leenwpoort Tins	26 9*	26 0*	26 0*	26 0*	26 3
Lydenburg Farms	8 6	8 6*	8 6	8 6*	8 6
Meyer and Charl. . . .	90 0	90 0*	90 0	90 0*	90 0*
Modder B's	155 0*	155 0	152 6*	153 6†	150 0*
Modder Deeps	152 6*	152 6*	151 0*	153 6	153 0
Modder Easts	19 6	19 3	19 6	19 4*	20 0
Do. Options (3yrs.) . . .	5 0*	5 0	5 3	5 0*	5 9
Do. Options (4yrs.) . . .	5 6†	6 0	6 1*	6 2*	6 11
Hume Pipes	28 6*	—	28 0*	29 6*	28 0*
Natal Naviga. Colls. . .	—	—	20 0*	20 6	20 6*
National Banks	£14½*	£14½*	£14½*	—	—
New Boksburgs	1 0*	1 0*	1 0*	1 0*	1 0*
New Eland Dias	21 0*	21 0*	21 0*	—	21 0*
New Era Cons.	10 6	10 7	10 6*	10 6*	10 6
New Geduld Deeps	5 9*	5 9*	5 9*	5 8*	5 8*
New Heriots	12 9*	—	12 6*	12 9*	13 0*
New Kleinfonteins . . .	12 0	12 0†	11 6	10 9*	10 9*
New Modders	£26½	£26½†	£26½*	£26½*	£26½*
New States	20 0A	20 0*	20 3*	20 0*	20 3A
Nigels	4 6*	6 0†	4 6*	4 0*	4 0*
Nourse Mines	16 9*	16 9*	16 9*	16 6*	16 0*
Pretoria Cements	65 0	64 6*	64 0*	64 0	64 0
Princess Estates	3 0†	2 9*	3 0†	3 0†	3 0†
Rand Colls.	3 0*	3 0*	3 0*	3 0*	3 0*
Rand Nucleus	1 6*	1 6	1 6*	1 6*	1 6
Rand Select. Corp. . . .	82 0*	82 6	81 0*	81 0	80 C
Randfontein Deeps . . .	5 3*	5 3*	5 3*	5 3*	5 0*
Randfontein Est.	15 0*	15 0*	15 0*	14 6	14 0
Roberts Victors	—	—	5 0*	5 0*	—
Rooibergs	7 0*	7 6	7 5	7 6	7 6
Roodepoort Uniteds . .	3 0†	3 0†	2 9†	2 9†	2 6†
Ryan Nigels	3 3*	3 3*	3 3*	3 3*	3 0*
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*
Simmer and Jacks . . .	—	—	5 9†	—	—
Simmer Deeps	—	2 9†	2 9†	2 6†	2 6†
S.A. Breweries	35 0†	35 0†	35 0†	31 6*	—
S.A. Lands	6 3*	6 3*	6 2*	6 1*	6 1
Springs Mines	66 0	65 9*	65 9	65 0	65 6
Sub Nigels	27 6	27 6*	27 0*	27 0	27 6
S.A. Alkali	42 0	41 3*	41 6*	42 6*	41 6
S. Van Ryns	13 0*	13 6	13 0*	13 3	13 3
Transvaal Lands	22 6*	22 6	23 0*	22 6*	22 6*
Transvaal G.M. Est. . .	13 3*	—	13 0*	12 6	12 6*
Van Ryn Deeps	71 0	71 0*	71 0	70 9	70 6
Village Deeps	—	17 0	—	16 0*	16 0*
Village Main Reefs . . .	11 0*	—	11 0	—	—
Welgedachts	—	27 6†	27 6†	—	—
West Springs	23 6	23 9	23 6*	23 3*	23 0
Witwatersrands	19 0*	19 0*	19 0*	19 0*	19 0*
Wit. Deeps	13 6*	13 6*	13 9	13 6*	14 0†
Wolluthers	3 0*	3 0*	3 0*	3 0*	3 3†
Union 5 p.c.	£101½	£102†	£101½	£101½†	£101½
Zaaiplaats Tins	14 9*	14 9	14 6	14 6*	14 6*

*Buyers. †Sellers. AOdd lots. BEx London.

It is officially announced that Major James R. Leisk, C.M.G., late Secretary of Finance in the Union, and Mr. Ernest Oppenheimer, managing director of the Anglo-American Corporation of South Africa, Ltd., are joining the board of the National Bank of South Africa, Ltd.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.**An Easier Tendency—Johannesburg the Dumping Ground—Either Buried or Burned—Belated Orders on the Way—Merchant Shipping—Freights Will Drop—Iron, Steel and Pig Iron—Priority Certificates—White Lead and Linseed Oil.**

NOTWITHSTANDING that some values in Britain and America have advanced since the Armistice, prices generally in Johannesburg are easier or have that tendency. The fact is that merchants here have been caught napping as regards stocks, partly because of the war stopping suddenly and partly in consequence of too much faith being placed in priority certificates in getting goods through. The shipping has had something to do with the delays, but now and again material and goods have come through in bunches. For instance, in September South Africa imported £4,221,146 against £2,612,903 for September, 1917. This great difference was not all to do with values, but owing to a combination of circumstances, chiefly through the anxiety to obtain goods and materials, based on the fact of previous extra good profits. Another sure sign of overstocks here is that the official statement of imports for the nine months ending September, 1918, shows the immense total of £34,694,315 as against £25,033,650 for the corresponding period of 1917—about a third more. Unfortunately for Johannesburg, all overplus of any kind of merchandise finds its way here either in bulk or through brokers from the coast, etc. In London and other large European centres when any one market is overloaded there are many outlets for a surplus within a few days, whereas here when the merchandise reaches such a far-away inland centre as Johannesburg it must "be either buried or burned," as a broker remarked. This accounts for the depression ruling here, as there are many sellers and very few buyers, the latter of whom are naturally waiting to see which way events will take, as there are so many belated orders to be filled, both from America and England.

MERCHANT SHIPPING: EFFECT OF THE WAR.

According to Reuter, the effect of the war on the merchant shipping of the United Kingdom is strikingly illustrated by a Parliamentary paper, which shows that at October 31 the position of the world tonnage was as follows: Losses: 15,052,786 tons. Gains: New construction, 10,849,527 tons; enemy tonnage captured, 2,392,675 tons. Net loss: 1,811,584 tons. The position of British tonnage, excluding transfers to and from the British Flag, then was as follows:—Losses: 9,031,623 tons. Gains: New construction in the United Kingdom, 4,342,296 tons; purchased abroad, 530,000 tons; enemy tons captured, 716,320 tons. Net loss: 3,443,012 tons. The redeeming feature now is that the submarine menace has been away just over a

month, hence no loss from that source, and in addition a satisfactory output from the world's shipbuilding yards will materially assist. Another important factor is that there is three months' further grace, as the peace will not, according to the latest advices, be fixed up before March at the latest. Therefore no hurried movement of troops will take place until then, so that meanwhile the mercantile fleet will have a free hand to deal with its legitimate trading, thus catching up much of the leeway in moving foodstuffs and merchandise generally. The shipping offices in turn have resumed quite a bustling appearance, as one office alone has 850 passages booked to London, with £10 deposit in each case. The conclusion of the matter is that in a few months the shipping position will resume somewhat normal conditions, with a squeeze perhaps, when the American troops return home again.

Mr. J. W. Jagger, M.L.A., at a public gathering at Capetown on Wednesday, said: "Personally, he thought that freight would drop almost immediately because of the tremendous activity in shipbuilding, especially in America, and there was not the remotest doubt that in twelve months' time freights would drop largely."

POSITION OF IRON, STEEL AND PIG IRON.

There has been a little more activity in the bar iron and mild steel trade, but no alteration in values, excepting in a few sizes difficult to obtain. Priority certificates are still needed from Britain, but the manufacturers there are taking general orders without them, but when it comes to a question of preference the priority orders secure it. Hence the Chief Buying Department recommend priority certificates for urgent cases. The question of the Transvaal pig iron industry has been allowed to rest after the exhibition of really nice specimens in prominent shop windows at Pretoria and Johannesburg. However, the subject forces itself forward again through the annual meeting of the Transvaal and Delagoa Bay Investment Company. The directors' report states that the company has participated in starting a new undertaking to produce pig iron from ore found close to Pretoria, as the Pretoria Iron Mines, Ltd., is a company promoted with a view to the ultimate manufacture of various iron and steel products. So far, the report goes on to say, the pig iron turned out has proved to be of satisfactory quality, and as the company commenced work under very sympathetic auspices, it is hoped that it may prove not only a success, but the forerunner of a great and

important Transvaal industry. Seeing the company referred to paid a 25 per cent. dividend for the past year, also that Messrs. Lewis & Marks are supporting the pig iron industry at Vereeniging, it proves that the financial aspect of pig iron is well assured.

OILS, COLOURS, WHITE LEAD, ETC.

White lead is easier between merchant and merchant at about 95s. per 100 lbs. Turps are steadier at the lower rate of 85s. per case of two 4's, as the recent consignments have been pretty well absorbed, and now the wholesalers are awaiting fresh shipments. Linseed oil has an easier tendency at 14s. for raw and 15s. for boiled. Salad oil is 130s. for the best and 110 seconds. South African nut oil is 80s. The factories at Durban and Delagoa have developed well during the war period, therefore this local product has an excellent chance of staying. Spanish olive oil is easier at 25s. to 27s. per gallon, as a shipment has arrived after being 2½ years on order. A little while back the price was 30s. to 35s. per gallon. This is a small indication of the sensitiveness of our market, for immediately a consignment arrives a difference is almost invariably made in our prices. Another case is that of glycerine, which is now 6s. 9d. to 7s. 6d. per lb., as compared with 10s. at one time. A recent shipment came in, but people will only buy actual requirements and not for stock owing to the wait-and-see policy. Imported grease is £40 to £45 per ton, and local £33 10s., but it is said that a circular has been issued advancing the latter from 5 to 10 per cent. in consequence of the shortage of raw materials. By the way, the embargo on white lead and linseed oil from Britain has not been lifted by the British Government. The local distributors have excellent demands from the smaller contractors, especially in paints and wallpapers, for work preparatory to the Christmas holidays.

THE TREND OF BUSINESS.

The holiday on Wednesday and another on Dingaan's Day on Monday obviously interferes with the smooth running of business. There are a number of quiet sellers, but practically no business of consequence, as the speculative element as regards purchasing is a non-existent quantity. The special feature is that the Chief Buying Office is doing very little business indeed, apparently awaiting instructions as to the future. This Chief Buying Office has done very essential work during the war, but obviously the day must come when the pre-war conditions will be reverted to. However, such a contingency is not expected until after peace, which is not probable under about six months. Financial matters in the mining material world are spoken of as sound, especially with the ordinary merchants, who have not been speculating in futures. In all fairness it is also right to mention that not a financial whisper has been heard in reference to speculators in connection with mining materials.

TIMBER AND BUILDERS' HARDWARE.

News is scarce, but the exchange between London and Sweden is practically normal, hence deals are quoted at a penny per foot lower, viz., 1s. 10d. It is said that several mills in Norway and Sweden are quoting fractionally lower, but "nothing worth remembering" was the remark made by an importer. Second-hand best deals are firm at 1s. 3d., and roofing iron 1s. 2½d. per foot. The new iron is a penny per foot cheaper for 24-gauge of the various lengths. Builders' hardware is quieter during the present month, more so than for twelve months past, owing to the 'flu and the peace question, as contractors feel that nothing much will be done this side of the New Year. The ordinary price of glue is from 1s. 6d. to 1s. 9d. per lb. wholesale, but it is said that a parcel was offered during the week at 1s. 3d. per lb. The losses on glue has been great from a speculator's point of view.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 1s. 10d. to 2s.; flooring, 4½ x ¾ and 6 x ¾, 10½d. to 11d. per sq. ft.; ceilings, 6 x ½, 6½d. to 7d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, ½in. x 12in., 1s. 4d. per foot; 1in. x 12in., 1s. 8d.; teak, 25s. to 30s. 6d. per cubic foot; shelving,

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1s. 3d.; Jarrah, 14s. 6d. cu. ft.; poplar, 1in. x 12in., 1s. 9d.; scantling, 1s. 10d. to 2s. per ft.; beaver boards, 9d. to 9½d.; galvanised iron, 24-gauge, 8ft. to 10ft. 1s. 11d. to 2s.; 11ft., 2s. 1d.; 12ft., 2s. 2d.; 26-gauge, 6ft. to 8ft., 1s. 9d.; 9ft. & 10ft., 1s. 10d.; flat galvanised, 24 & 26-gauge, 95s. 100lb.; floor brads, 95s.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 85s. 2¼ 1.5 galls.; 10—1's; 5-6 imp. tins, 100s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ¼in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 2½oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £33 to £33½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2¼ I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 35s. 6d. to 47s. 6d.

CHEMICALS.—Mercurry, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate (Japanese), 14/6 lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 1s. 3d. to 1s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 40s. to 45s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 65s.; ditto, 3/22, 40s. to 42s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 46s. to 50s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3¼in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ¼in. and 3-16in. round iron, 95s. to 96s.; ¾in. do., 85s.; ½in. steel, round, 80s.; ½in. round iron, 77s. 6d.; do. steel, 72s. 6d.; ¾in. round iron, 70s.; do. steel, practically none in town; ¾in. round iron, 62s. 6d. to 65s.; ¾in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunswart local iron, 45s 100lb. Vereeniging mild steel also 50s. per 100lb. Steel-plates, 75s. to 80s.; many sizes unobtainable. Hexagon and cuphead bolts, ¼in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 2s. 6d. lb.; ¾in. dia., 1s. 6d.; 3½in. and up long, 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb; ½in. dia. and 2½in. up long, 75s. per 100lb.; ¾in. dia. up to 2½in. long, 1s. 6d. per lb.; ¾in. diameter-2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 1s. per lb.; ¾in. and 1in. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in. 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ½in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction kinoxite, 11d. to 4s. and special prices per lb.

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Engineering Notes and News.

ROAD MOTOR TRACTION IN SOUTH AFRICA.

An Auxiliary to the Union Railways—Promoting Development of the Outside Districts.

THE General Manager of Railways, in his annual report, writes: Numerous applications have been made for the establishment of motor services in districts distant from the railway. Whilst it has been necessary to recommend that these applications be declined, owing to the unsuitable construction and standard of maintenance of country roads, I realise the disadvantage at which these communities are placed by reason of their isolation from markets. The spirit of enterprise now abroad has extended to outlying districts, many of which, though unfortunately situated in relation to markets and far removed from the stimulating influences of rail communication, are making commendable strides towards development. The opportunities afforded by the favourable prices at present offering for products of all kinds appear to be fully realised in these outlying districts, but a serious handicap is imposed by the absence of reliable transport facilities. In a country like South Africa, in its present state of development, and with but a sparse population in the outlying districts, much useful service could be rendered by mechanical transport, if worked in conjunction with and as an auxiliary to the railways. Some of the services might for a time be run at a loss, but the shortfall would be less than on a branch line, however cheaply it be constructed and worked. As soon as the war is over pressure will be brought to bear for the construction of railways in all parts of the Union. Even if a comprehensive scheme of construction be decided upon, it will not be adequate to satisfy requirements, as the capital expenditure necessary to construct all lines in demand in the near future would represent a sum altogether beyond the resources of the Union Treasury. Some of the lines advocated would, for a time at least, prove a severe drain upon the revenue of the Administration, a large proportion of which would be required to meet losses on branch lines.

A LIMIT TO NON-PAYABLE LINES.

I appreciate that considerations other than the balance-sheet factor must necessarily and very properly govern the construction of State railways, but there is obviously a limit to the non-payable lines that can be constructed without adversely affecting the finances of the Administration, and necessitating readjustments of rates which might react seriously upon trade and upon the development of many struggling industries. It may, therefore, be necessary to call a halt with regard to new construction before all contending claims have been met, and development will unquestionably be retarded if some of the districts now seeking relief have to wait until all prior claims for railway communication have been satisfied. The Administration has proved what other countries have also proved, namely, that mechanical transport is doomed to failure unless the roads are well constructed, and are maintained at a high standard. Country roads in South Africa are not, as a rule, suitable for heavy motor traffic, and in view of the importance of the road factor in any consideration of the question, responsibility for the solution of the problem cannot rest solely and entirely upon the Administration. At the same time, I think the question of the provision of transport facilities for these outlying districts is worthy of serious consideration, as a matter of public policy, and in the interests of the fuller development of the resources of the State. Practically all departments are interested, namely, Agricultural, Lands, Forests, and Mines and Industries. The Provincial Administrations should be associated with the scheme, as they control the roads, and are equally interested in the prosperity and development of their respective Provinces. The question of providing transport for outlying districts and the possibilities of motor traction as a solution of the problem is

much to the fore at present, even in countries like Great Britain, with a vast network of railways. In the past the motor was regarded in Great Britain and America as a competitor to be eschewed. As I have already indicated, however, I look upon it more as an ally, and that is the spirit—awakened partly by war necessities—that now predominates both in Great Britain and the States. One prominent railway journal says: "As has been abundantly proved in connection with the traffic of London alone, the interests of the community, and, indeed, those of all concerned, are best served by a fusion of transportation systems with a centralised concentrated effort to reach the best results in service and returns." A prominent military engineer, with considerable experience of transport arrangements in India, says: "Everyone knew now what a mistake that had been (referring to the theory that railways in themselves were a complete solution of the transportation problem), and it could be seen how completely any system of railways, not supplemented by a system of road carriage, failed to develop the farm interests of a country, failed to distribute its food . . ." In some districts in England railway companies run motor services with a view to developing traffic up to a point which will justify new railways. A prominent British railway official, in referring to these services, stated that, as compared with light railways, they involved less capital outlay, cost less to work, involved no difficulties in regard to legal inquiries or land expropriation before establishment, and gave a greater elasticity of service. It is, however, constantly emphasised that the fullest utilisation of road transport depends on a comprehensive scheme of road improvement. While this refers more to America than to Great Britain, it applies with special force to South Africa, where roads are not suitable for motor transport except in the environs of large towns.

THE IMPORTANCE OF GOOD ROADS.

In my 1916 report I laid stress upon the importance of good roads as a means of promoting development in remote districts. The question of road construction in Victoria (Australia) as an adjunct to the railways was investigated by the Royal Commission appointed to inquire into the working of the Victorian Railways. An extract from the Commission's report is subjoined: "For the success of the railways, good roads for the conveyance of produce to the system are necessary, and this aspect has been considered. . . . Your Commissioner is of opinion that if the funds made available to the Roads Board were expended chiefly in the construction and improvement of the roads giving access to the railway system, the State and the railways would benefit." I also subjoin extracts from the report of the Commissioner of Railways for Western Australia for the year ended June 30, 1917, which are not without interest in this connection: ". . . The present result (a deficit of £214,834) is unquestionably due to the extension of the railways without a corresponding increase in population and production. . . . It is a question for careful consideration whether the policy of construction can be reasonably and safely continued until the population assumes such dimensions and the State's resources reach that stage of maturity as to provide a sufficiently increased business to warrant the additional financial liability incurred in providing departmental lines. . . . Our railway system has already considerably outgrown the population and production of the State. Therefore, it could not be hoped that it could continue to be worked at a profit under such conditions. . . . The obvious remedy, from a railway point of view, is to ensure sufficient settlement in the districts already served by the existing railways before any further lines are constructed." Agricultural and

industrial development must proceed in unison with railway expansion, and unless production in South Africa continues to advance on a scale sufficient to justify a progressive policy of railway extension, the construction of many lines still necessary to open up the country will be delayed. As is stated in the report of the Royal Commission recently

appointed to inquire into railways and transportation in Canada: "But area means potentialities, not actualities. Population alone can supply traffic. That the railway mileage already built will be insufficient for the Canada of the future, we doubt not. The question which concerns to-day is the relation of existing mileage to the circumstances of the present and the future."

Ellison's Motor Ampere Calculator.

Any device which saves time in connection with the installation of electric motors helps to increase the number of power consumers. Electric power installation engineers frequently have to deal with machines not only for different voltages but for different systems, where a few years ago it was customary to employ only C.C. motors. The extension of the generating station with A.C. plant has brought into general use alternating current mains for power purposes. We have grown accustomed to talking glibly of the use of electric power in industry, and we are apt to overlook that in every instance the motors have to be handled by the electric power contractor, who, in addition to fixing the motor, must also arrange the correct size of the cable with which to supply it. We are quite sure that electric power contractors will welcome the Ellison Ampere Calculator, for it will relieve them of the trouble of constantly working out the current required for the motors they are installing and the nearest size of cable suitable for use in connecting up with the power circuit. The calculator is simplicity itself. It comprises a chart which reads in horse power up to 100 and in amperes up to 200. The horse power is read off in vertical lines and the amperes in hori-

zontal lines. The centre of the chart is occupied by four arcs reading in voltages from 1 to 600—1-phase C.C., 2-phase and 3-phase circuits respectively. Pivotted at the left-hand bottom corner is a narrow strip of celluloid, which sweeps over the whole of the diagram and which can be moved so that its left-hand edge, when placed against the voltage of the motor, gives a reading of the amperes where it intercepts the horse power line. No more simple method for obtaining the current required for any motor from 1 to 1,000 h.p. could be devised. At the left hand of the chart is a column containing figures which give the nearest standard V.I.R. cable S.W.G. I.E.E. rating to the current shown in the column immediately adjoining. The calculator measures 14 inches deep by 12 inches wide, and can either be hung on the wall or stood on the desk. It is finished in best washable gelatine and has every appearance of being built to withstand hard usage. It is one of the most practical devices we have seen for a long time. It should also serve as a useful piece of publicity literature for George Ellison's products, in the way of C.C. circuit breakers and A.C. motor control gear. Both these latter are well known to our readers as representative types of standardised British electrical products.

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Company Meetings.

TRANSVAAL & DELAGOA BAY INVESTMENT CO.

£100,000 PLACED TO RESERVE

The highly satisfactory position of the Transvaal and Delagoa Bay Investment Company, Ltd., was the subject of an interesting report submitted at the annual meeting of the company which was held in Exploration Buildings on Dec. 10. Mr. S. C. Black presided, and also present were: Messrs. J. T. Goldsbury, P. C. Haviland, G. Senn, S. Fleischer, Comte F. de Ferrieres, W. J. Dold, W. M. Berlein and B. Moses, secretary.

(Share representation, 80,577).

In moving the adoption of the report, the chairman said:—

The report and statement of accounts, which I have pleasure in submitting to you for adoption, will, I feel sure, be as satisfactory to you as they are to the Board. The realised net profit, after writing off £8,911 4s. 3d. for depreciation, and making provision for the payment of income, dividend and excess profits taxes, amounts to £81,936 6 2

We brought forward from last year 125,272 2 10

207,208 9 0

Less placed to reserve fund 100,000 0 0

Making a total to credit of profit and loss account of £107,208 9 0

Your directors considered it desirable to create a reserve fund, and to place to it the sum of £100,000; in terms of clause 98 of the memorandum of association, I shall invite you at a later stage of this meeting to confirm it. We recommended a dividend of 25 per cent. equal to 5s. per share, free of Union of South Africa dividend tax. This will absorb £46,250, leaving £60,958 9s. to be carried forward. The balance sheet, as in previous years, exhibits the various items with such clearness that I need not refer to them in detail. The financial position of your company has been still further strengthened, which must be gratifying to all shareholders. Cash and equivalent assets represent £192,628 10s. 8d. In this total is included cash at bank, British and Union of South Africa war loans and Treasury bills. The profits for the year again show an increase, derived not only from additional tonnage of coal sold, but also from other of your company's investment.

The directors' report briefly refers to a number of properties prospected during the period under review. Though quite ready to take advantage of any opportunity to invest in promising mining and industrial propositions, we have always exercised considerable caution by avoiding ventures of a highly speculative nature. We are even now busy closely investigating a number of properties, which we hold under option, but whose prospects are still undetermined.

A Prosperous Year.

The Transvaal and Delagoa Bay Collieries, owned entirely by your company has, despite many difficulties, experienced a prosperous year. We were able to keep both pits at work,

and though at times neither was working at its full capacity, the output for the 12 months reached a total of 757,709 tons, as compared with 674,367 for the previous year. Our maximum output in any one month was 75,269 tons, and the largest in any one day 4,119 tons. This, however, represents by no means what we are able to do, as our pits and surface equipment could have dealt with a still larger tonnage. Whilst a shrinkage in shipping to South African ports was but too apparent during 1917-18, yet considering the abnormal shortage of available vessels due to war demands in Northern seas, we have much to be thankful for that so little real disturbance to South African trade manifested itself, especially during the first six months of the present year. Whilst in pre-war times we often had reason to complain of the shortage of railway truckage, it is but fair and due to the South African Railways to say that seldom has the supply to the collieries been so regular and prompt as during the present year, and I recognise and appreciate the efficiency of the department responsible for the allocation of rolling stock.

6,082,105 Tons.

The Transvaal Owners' Association, of which your colliery is a member, disposed of 6,082,105 tons during the year ended June, 1918, as compared with 5,902,158 tons in the preceding year. Of this total the mining industry utilised 1,876,584 tons, the Government Railways within the Union of South Africa 1,067,766 tons, shipping at Delagoa Bay 850,518 tons, shipping at Capetown 294,946 tons, various industries and consumers all over South Africa, the balance of 1,962,291 tons.

The Association continues its efforts to foster and advance an export trade, and I hope we shall have the support of Government to encourage the expansion of the coal industry by low railway rates, both for bunkering and in trading with other countries. The present rates, whilst they enabled South Africa to secure a fair share of bunkering and export trade in the abnormal times of war, consequent on high prices ruling elsewhere, would not only prevent any expansion of our coal industry, but arrest its development. And here let me say, we have observed that whenever the railway revenue failed to approximate to the Minister's estimates the simple expedient of raising the bunker coal rates was found his principal and most convenient refuge. Throughout the war the Transvaal Collieries have either not advanced their prices, or, when found absolutely necessary to do so in order to meet the higher working costs, the advance has been very slight. We do not notice that the rates for other products of this country—which had greatly appreciated in price—were in any way increased in proportion.

Railway Rates.

In proof of my assertion, I submit to you the following figures. Before the war the railway rate for bunker coal from Transvaal shipping collieries to Delagoa Bay, which is 277 miles distant, was 6s. 1d. per ton; during the war it was raised to 16s. 7d., or an increase of 173 per cent. To the port of Capetown it was 14s. per ton, less 1s. rebate. In 1916 the rebate was cancelled and the rate increased to 20s. In 1917 it was again advanced to 24s., and in 1918 a terminal charge

was added, making it 24s. 6d. per ton. We were assured that these increases were merely temporary war measures, and under the circumstances they were accepted with little demur. Now it is proposed to still further increase the rate to Capetown to 27s. per ton, a total advance of 103 per cent. on the pre-war figure. I am afraid colliery interests are singled out because they are apparently politically voiceless, a position which it would be most desirable to remedy. I feel that with proper and sympathetic treatment, the coal industry of this country is capable of considerable expansion and would thus materially benefit the State. The collieries in South Africa, I am glad to state, have been free from disturbances in the matter of labour disputes, which enabled the coal output to be produced with regularity. This state of affairs was, and is, due to the good sense on the part of both employer and employed. We felt that, however uncertain the supplies of coal might become during the war in other parts of the Empire, no shortage either to shipping or other industries should be ascribed to lack of a right spirit on the part of those engaged in this industry. Everyone connected with the collieries did their best to maintain and, where necessary, increase the production, and I take this opportunity to express our recognition of the loyal service of both whites and natives employed in the business of coal winning throughout the long period of stress and strain of war.

Since the close of our financial year South Africa has been visited by an outbreak of Spanish influenza. The disease has been of unexampled severity, and the mortality caused by it greater than anything hitherto experienced in the history of the country. A great number of our employes became subject to the epidemic, but owing to timely precaution on the part of the management, I am thankful to say that your company did not suffer the loss of a single white or native employe, directly attributable to the epidemic.

A New Undertaking.

We have participated in starting a new undertaking in this country, namely, the production of pig iron from ore found close to Pretoria. The Pretoria Iron Mines, Ltd., is a company promoted with a view to the ultimate manufacture of various iron and steel products. So far, the pig iron turned out has proved to be of satisfactory quality, and as the company commenced work under very sympathetic auspices, let us hope that it may prove not only a success, but the forerunner of a great and important Transvaal industry.

If a country's potential industrial greatness is dependent on its resources of coal and iron deposits, then South Africa's future is assured. Its production of gold and diamonds has been no mean factor in the increase of its wealth and activity, but I look forward to a time not far distant—provided no artificial restrictions are imposed—when agriculture, coupled with the expansion of its coal, iron and other industries, will lift South Africa to a very different commercial plane from that occupied by her at the present time.

Turning now to your landed interests, we disposed of a few farms, retaining the mineral rights, and acquired by purchase in December last

the coal rights over some 2,677 acres in the Middelburg district of the Transvaal. The directors' report briefly touches upon it, and I would just add that the Board is well satisfied with the exercise of its option, which was obtained so far back as 1904. Otherwise the schedule of your property assets calls for no further comment. In company with my co-director, Mr. J. Berlein, I recently paid a visit to Delagoa Bay. We found that progress is discernible in many directions, and improvements in sanitation, streets and buildings are undoubtedly apparent. The nearness of the port to the Transvaal should make Delagoa Bay a very important coaling station in the early future. That is not only our own view, but it is shared by those on the spot well qualified to form an opinion. I should like to take this opportunity to express our acknowledgements to Col. Errol Macdonell, C.M.G., the British Consul-General at Lourenco Marques, for the invariable courtesy shown to his countrymen visiting Delagoa Bay, and the attention to their interests, especially during the long period of the war. Included in the statement of accounts is an item of £1,323 5s. for sundry charitable and war donations, but this does not include the payments made to those of our men who were still serving at the front, and their dependents. I feel sure that you cheerfully concur in such expenditure, and I will beg you formally to confirm it.

Sacrifices of the War.

We meet to-day under circumstances that point towards universal peace. Looking back over the past four years of war, we in South Africa can but faintly appraise the immense sacrifices of Great Britain and her Allies, which were necessary to secure the ultimate triumph of their arms. We owe an immeasurable debt of gratitude to the men and women who gave up their lives for the Great Cause, and let us also never forget those who survived the ordeal. I had hoped that our colleague, Mr. J. Berlein, would have been present at the meeting, but he was unfortunately unable to attend. This company owes its inception to him, and he was our chairman until he took up his permanent residence in England. Mr. Berlein has rendered valuable services to the company over a very long period, services for which no remuneration was ever sought. At all times he has promoted the company's welfare, and his business prudence and acumen have been of distinct benefit, and have contributed in great measure, to the successful results achieved in the past, and to the present gratifying position of the company. Like innumerable other fathers, he has had to endure the bereavement resulting from the sacrifice of two brave sons who fell on the Western Front early in the war, and I am sure that you will join with me in recording our profound sympathy to him and to his family. It is with great regret I have to announce the demise in September last of Mr. Jas. Ferguson, for over 17 years one of our colleagues on the directorate. He resided in England for some years past. The loss of his only son on active service, caused a sudden breakdown in health, which undoubtedly hastened his end, and to his family also we tender our sincere sympathy. Mr. W. J. Dold acted for Mr. Ferguson on the board as his alternate. The latter gentleman has been appointed to the vacant seat, which I beg you to confirm. Before closing my resume, it

may interest you to know that the enemy shareholders of this company do not represent a holding of more than 6.1 per cent. and, as you are doubtless aware, their shares are vested in the hands of the Custodian of Enemy Property both here and in London. During the long period of the war, mining undertakings in South Africa have experienced considerable difficulties, which, however, in our case, were successfully overcome. In this connection, much credit is due to our general manager at the colliery, Mr. Jas. McPhee, M.Sc., M.E., for his energy and foresight, and I wish to take this opportunity to record our appreciation of his services. I should like our staff and workmen to know how much we value the good work done by them, also the officials at the Head office, Johannesburg, at our London office and our agents at Delagoa Bay. With these remarks I now beg to move that the directors' report, balance sheet, and profit and loss account for the year ended 31st August, 1918, be received and adopted, and that the amount of the reserve fund therein referred to be fixed at £100,000.

Mr. Haviland, in seconding the adoption of the report and accounts, said: In seconding the resolution that has just been proposed I would like to draw the attention of shareholders to the excellent work that has been done, and to the very satisfactory results obtained. To be able to carry £100,000 to a reserve fund, declare a dividend of 25 per cent. and at the same time carry forward a balance of £60,958 is a position on which the directors can congratulate themselves. To these few words I would like to add that although as a general rule shareholders are satisfied to receive their dividends without comment, in this case I would like to take the opportunity of expressing the thanks and appreciation of shareholders to all those connected with the management and staff of this company.

Mr. J. T. Goldsbury said: I should like to draw the attention of shareholders to the very small amount of fees drawn by the directors for the year under review, which I think we must all admit is inadequate. I have, therefore, much pleasure in proposing that a bonus be voted to the directors which, with the amount drawn by them as ordinary fees, will bring their total fees for the year ended 31st August, 1918, to one thousand pounds.

This was seconded by Mr. G. Sonn, and carried unanimously.

The report and accounts were adopted, and the retiring directors were re-elected.

BLAAUWBOSCH DIAMONDS, LIMITED.

The ninth annual general meeting of shareholders in Blaauwbosch Diamonds, Ltd., was held in the Board Room, No. 2, Cheapside, on December 5th, Mr. G. S. Ronaldson presiding. There were present:—Messrs. J. van Praagh, M. M. Aaronson, C. W. Bodley, N. F. Marcus, and J. D. Tyson (secretary). Shares to the number of 18,413, personally and by proxy, were held out of an issued capital of £24,500. The minutes of the last annual general meeting, and the report and statement of accounts, were taken as read. The report of the directors was as follows:—The

nominal capital of the company is £24,500 fully issued. The company owns 100 morgen freehold under the title of "Catherine's Fancy," being a portion of the farm "Blaauwboschfontein," No. 229, District Boshof, O.F.S., and six-tenths of the mining rights over the said 100 morgen, and we hold a lease of the Government's four-tenths share. The number of loads removed from the mine and treated during the year is fully stated by the manager in his report hereto attached. We have again been hampered by the difficulty, and in some cases impossibility, of obtaining necessary supplies, a difficulty which will increase with the prolongation of the present war. The balance-sheet shows a net profit on the year's working of over £9,000. A liberal amount has been written off for depreciation, provision has been made for the Government mining tax, and the debit standing to profit and loss account has been liquidated, which leaves us with a credit balance of £3,300. Under the existing difficulties referred to in the previous paragraph, and the enormous increase in the price of all our requirements, the position must be considered satisfactory. The diamonds produced from the mine totalled 20,110½ carats, and realised £30,613 11s. 11d. Messrs. B. Oppenheimer and N. F. Marcus retire in terms of the Articles of Association, and, being eligible, offer themselves for re-election. Mr. F. J. Gardiner retires, but offers himself for reappointment as auditor. The Chairman, in moving the adoption of the directors' report and financial statement, said:—At our last meeting I remarked that the large amount of dead work done during the previous year would greatly assist in this year's work. I think I can fairly claim that this forecast was correct; for the year ended June, 1917, we treated 60,000 loads of blue; 16,500 loads of tailings, and hauled 230,000 loads of reef; and for the year ended June, 1918, 93,660 loads of blue, 12,000 loads of lumps and tailings were treated, and 95,000 loads of reef hauled, whereas we dumped four loads of reef as against one load of blue treated to June, 1917, we had only to haul one load of reef for every load of blue to June, 1918. The difference between the amount of blue ground and tailings treated in the two years is reflected in the price realised for the diamonds; in the former year 18,429 carats produced realised £21,991, and in the period under review 20,110 carats realised £30,757, an average of approximately 24s. per carat as against 30s. The net profit for the year is £9,000. This enabled us to place the affairs of the company upon a sound financial basis, as we have wiped out the debit standing to profit and loss account, an amount of £3,100 has been written off equipment account, and we carry forward £3,300 to the credit of profit and loss account. The greatly increased cost of all mining material has raised our working costs by 25 per cent., otherwise we would be able to show a still more favourable position. Prospecting and development have disclosed an extension of four or five claims under the reef, and since the close of the financial year we have discontinued hauling blue to clear the reef from these claims, and also to render the mine safe for deeper workings. The manager and staff have again loyally carried out their duties, and I should like to record the Board's appreciation of their services.

In conclusion, the Chairman moved "That the reports and accounts to the 30th June, 1918, as audited, and

now before the meeting, be approved and adopted."

Mr. Van Praagh seconded, and the motion was carried.

On the motion of Mr. Aaronson, seconded by Mr. Tyson, Messrs. B. Oppenheimer and N. F. Marcus were re-elected directors.

Mr. Aaronson moved that the remuneration of the auditor for the past year be left in the hands of the directors, and that Mr. F. J. Gardiner be reappointed for the ensuing year.

This was seconded by Mr. Bodley, and agreed to.

A vote of thanks to the Chairman concluded the meeting.

PNIELS, LIMITED.

The fifth annual general meeting of shareholders in Pniels, Ltd., was held in the Board Room, 2, Cheapside, Kimberley, on December 4th. Mr. G. S. Ronaldson presiding. There were present:—Messrs. M. M. Aaronson, J. van Praagh, N. F. Marcus, and J. D. Tyson (secretary). Shares to the number of 77,339, personally and by proxy, were held out of an issued capital of £100,000. The Secretary read the notice convening the meeting. The minutes of the last annual general meeting, and the report and statement of accounts, were taken as read. The report of the directors was as follows:—The authorised capital remains at £125,000 in 125,000 shares of £1 each, of which 100,000 are issued and fully paid up. The gross revenue for the year was £3,390 10s. 9d., whilst the expenditure amounted to £3,553 0s. 6d., which leaves a loss of £162 9s. 9d. on the year's working. This loss is attributable to the serious decline in the production of diamonds and the greatly enhanced cost of all material. The accompanying manager's report will show that the number of diggers operating on our property has remained stationary throughout the year; nor can an augmentation be looked forward to during the continuance of the war. Messrs. G. S. Ronaldson, J. van Praagh, and N. F. Marcus retire in accordance with the Articles of Association but, being eligible, offer themselves for re-election. Mr. F. J. Gardiner retires, but offers himself for reappointment. The Chairman, in moving the adoption of

the report and statement of accounts, said:—In presenting to you the directors' report and accounts, very few words are necessary. The issued capital of the company remains unaltered, and stands at £100,000. The company's operations for the year show a loss of £162, which compared with the two preceding years would in ordinary times be regarded as most unsatisfactory, but can be explained by the loss of revenue usually derived from the construction of breakwaters, which, owing to the phenomenally high state of the river, was quite impracticable during the year. Moreover, owing to the continuance of the war over the whole period now under review, no influx of diggers took place. Happily an armistice has been concluded, and a peace, glorious to the Allied arms, is in sight; although during the present financial year we are not likely to feel the benefit, we are hopeful that next year our position will be improved. The financial position of the company remains perfectly sound, our cash assets amounting to nearly £19,000, whilst our liabilities are practically nil. I have again pleasure in recording the excellent services rendered by the Manager, who throughout the year carried out his duties to our entire satisfaction. I now beg to move that the directors' report and statement of accounts be adopted.

Mr. Aaronson seconded the motion, which was agreed to.

Mr. Aaronson moved that Messrs. G. S. Ronaldson, J. van Praagh, and N. F. Marcus, the retiring directors, be re-elected.

Mr. Tyson seconded the motion, which was agreed to.

On the motion of Mr. Aaronson, seconded by Mr. Marcus, it was resolved that the remuneration of the auditor for the past year be left in the hands of the directors, and that Mr. F. J. Gardiner be reappointed for the ensuing year.

A vote of thanks to the Chairman for presiding terminated the proceedings.

NEW THOR DIAMOND MINING CO., LTD.

The eighth annual general meeting of shareholders in the New Thor Diamond Mining Company, Ltd., was held in the

Board Room, No. 2, Cheapside, Kimberley, on Thursday, December 5, Mr. G. S. Ronaldson presiding. There were present Messrs. J. van Praagh, C. W. Bodley, G. R. Benford, N. F. Marcus, M. M. Aaronson, and J. D. Tyson (secretary).

Shares to the number of 45,833 were represented personally and by proxy.

The minutes of the late annual general meeting and the report of the directors and statement of accounts were taken as read.

The report of the directors was as follows:

Mining operations have not yet been resumed, nor will it be practicable until the termination of the war, when it is hoped that the present very serious difficulties in obtaining all necessary mining material will disappear. The work of prospecting other portions of our property has been steadily proceeded with, but nothing of an important nature has been discovered. It will be seen from the balance sheet that a satisfactory profit has been made on the realisation of certain of our investments. In terms of the articles of association all the directors retire, but being eligible, offer themselves for re-election. The retiring auditor, Mr. F. J. Gardiner, offers himself for reappointment.

The Chairman, in moving the adoption of the report and statement of accounts, said: "In presenting to you the directors' report and statement of accounts, I have very little to add to the information I gave you at our last annual meeting, the hope then expressed that sufficient profits would result from our investments has been justified, as not only have they enabled us to pay for all prospecting done during the year, but a substantial amount has been utilised in reducing the balance standing to the debit of profit and loss account. Prospecting, thus far, has not revealed the existence of further payable mine ground on other portions of the property, but until the whole property has been thoroughly prospected it is the intention of your board to continue this work. I now beg to move that the report and balance sheet be adopted.

Mr. Benford seconded the motion, which was agreed to.

Mr. Bodley moved, Mr. Tyson seconded, and it was resolved that the retiring directors, Messrs. G. Roy Lewis, H. Daubney, Dr. G. H. Csmar, G. S. Ronaldson, J. van Praagh, and N. F. Marcus, be re-elected.

Mr. Marcus moved, Mr. Bodley seconded, and it was resolved that the remuneration of the auditor for the past year be left in the hands of the directors, and that Mr. F. J. Gardiner be reappointed for the ensuing year.

A vote of thanks to the chairman terminated the meeting.

At Bow Street Police Court recently Mr. Garrett had before him the adjourned summonses against

Nationality of Mr. Henry Samuel. Builders, New Lydenburg Minerals Exploring Company, Transvaal Northern Estates Company, Zwartland (Transvaal) Land Company, Transvaal Exploring Land and Minerals Company and Transvaal United Trust and Finance Company for failing in furnishing particulars to the Registrar of Companies to give full and accurate information, as required by the Companies Acts, respecting the nationality of origin, etc., of one of the directors—Henry Samuel. There were also adjourned summonses against Heyman (known as Henry) Samuel, of Gloucester Terrace, Paddington, charging him in respect of each of the companies named with permitting default to be made in furnishing the particulars required concerning his nationality. It was stated at the previous hearings that in the returns made by the companies Mr. Samuel was described simply as a British subject. The space in which his nationality of origin should have been stated if it was different from his present nationality was left blank, thus leaving it to be inferred that he had always been a British subject, whereas, according to the prosecution, he was originally a German subject. On behalf of the companies it was stated that the returns had been filled up in accordance with the information supplied to them by Mr. Samuel himself. Mr. Frampton, on behalf of Mr. Samuel, said he had had an opportunity of considering what took place at

the last hearing, and had advised his client that he had in law no answer to the charge. Mr. Samuel, accepting his advice, would plead guilty; but it was only right that certain circumstances should be stated. Mr. Samuel was a Jew and had no German blood of any description running in his veins. His ancestors were Spanish and went to Poland before the dismemberment of that kingdom. He was born there, after the dismemberment, in German territory, of Jewish parents. He had always regarded himself as a Jew having no nationality whatever except the Jewish, which had not yet been recognised by the Courts. Being a pure Jew by descent, Mr. Samuel repudiated the idea that he was a German; he had never conformed to any of the obligations of German citizenship or done anything to lead anyone to treat him as a German. His son had served in the British Army in the present war, and his daughter had served as a V.A.D. nurse. Mr. Garrett said the defendant had undoubtedly made a statement to the effect that his nationality of origin was British, whereas in fact it was not. He was born in Germany and owed allegiance to Germany unless he had got rid of the obligation by naturalisation elsewhere. On each of the seven summonses he must pay a fine of £100, and would also have to pay 25 guineas costs—total £726 5s. In regard to the summonses against the companies, as the latter had been misled by Mr. Samuel into making the incorrect returns, he would order each company to pay only a fine of 20s. and five guineas costs.

Dr.		Cr.	
To Directors' and London Committee Fees	£218 8 0	By Realised Profit, Rents Received, Interest, etc. (less Estimated Taxes to 31st August, 1918, under Income Tax (Consolidation) Act, 1917	£99,653 16 4
„ Salaries, Printing, Stationery, Audit, Insurance, Advertising, Legal and General Expenses, Johan- nesburg and London (less Fees Received)	1,435 13 0		
„ Salaries, Insurance and General Expenses in Delagoa Bay	855 16 5		
„ Licences, Taxes and Expenses on Farms, Claims and Landed Properties	4,091 0 5		
„ Donations to War Relief Funds, etc.	1,328 5 0		
„ Property Maintenance Delagoa Bay and Trans- vaal	877 3 1		
„ Amount Written Off for Depreciation of Machinery, Buildings, Railway, etc.	8,911 4 3		
„ Balance carried to Balance Sheet	81,936 6 2		
	<u>£99,653 16 4</u>		<u>£99,653 16 4</u>

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AND ENGINEERING RECORD.

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Notes and News

The annual general meetings of the New Modder, the Modder East and Nourse Mines took place this week, and full reports will be found in this and the next issues. Comment on the many interesting features of the speeches from the chair must, however, be reserved till next week.

* * * *

The Minister of Mines and Industries has been pleased to appoint a Departmental Committee to inquire into and report upon the following matters:—(a) The desirability or otherwise of altering the present system of native trading on the mines, whether by the establishment of co-operative stores or otherwise. (b) The desirability or otherwise of altering the present method of the disposal of trading sites under the Trading on Mining Ground Regulation Act, 1910. (c) To what extent any such alteration is practicable and advisable. The following gentlemen have been appointed to be members of the committee:—Herbert Hamel, Mining Commissioner, Boksburg (Chairman); John James Innes Middleton, Under-Secretary for Finance; Herbert Sutton Cooke, Acting Director of Native Labour, Johannesburg; Johannes Petrus du Toit, Mining Commissioner, Krugersdorp.

* * * *

As was to be expected (says the *Australasian*), the Acting Prime Minister (Hon. W. A. Watt) was unable to offer any hope that the Commonwealth Government would pay a bonus for the production of gold in Australia. The same question is engaging the attention of leading mining men in London. A number of those who are moving in the matter are directors of South Africa mines, who have great financial weight in the city. The committee appointed to further approach the British Government are not of the sort to have their demand lightly set aside. It includes such men as Lord Harris, Sir Lionel Phillips, Sir Newton Moore, and Messrs. E. Taylor, D. O. Malcolm, and H. Blyth. The argument being used there is that any alteration paid in the price for gold does not involve a change in the gold standard as applied to the currency. The interesting part of the discussion is that one of the arguments is that, as the State saw fit to buy the whole of the Australian output of zinc in the interest of the Empire for a term of years, a purchase of the whole of the gold output might be justified on the same plea of Imperial interests.

* * * *

The strike at Block "A," Randfontein, has terminated and the men returned to work this week. As stated in our last issue, a Board of Enquiry sat at the Chamber of Mines, and it considered two points. On the first point the Board arrived at a unanimous finding that the evidence was not sufficient to prove that Day had been victimised. This finding was reported to a meeting of the Miners' Union held last Saturday at the Trades Hall, and the following resolution was adopted: "That the men return to work on Block 'A' and use every endeavour to secure the reinstatement of Mr. Day on the Randfontein Gold Mining Company, and further that we all agree to support Mr. Day financially until he starts work again." The procedure in regard to calling for a Board of Reference before taking strike action was also discussed by the Board of Enquiry, which came to the conclusion that cases of alleged victimisation should not be exceptions to the rule, and that the men concerned in such allegations would be safeguarded by a guarantee from the Chamber to the effect that if the Board found in favour of the man he would be reinstated and paid in full for his time off. Such an undertaking had been given in the case of Day. Two hints were thrown out by the Board of Enquiry in the way of advice. The first was that decisions by the men involving drastic action should be taken by secret ballot.

The second was that, as in the case of the Randfontein strike, when both parties refused to take the initiative in calling a Board of Reference, the management should report the matter to the Chamber of Mines and the men should report to the Federation of Trades. Then it would be for the Chamber and the Federation to bring the parties together. Under the resolution the strikers have now returned, and it is understood that work will be found for Mr. Day in some other part of the mine. The Miners' Union and the Chamber are meeting again to elaborate machinery for avoiding sudden strikes.

* * * *

By the death of Mr. John Hubert Davies, which took place last week at Capetown, the Rand loses a well-known member of the community, who was universally loved and respected by those who knew him.

The late Mr. Hubert Davies. He had taken a constantly active part in the business which bears his name from the time of its inception until about a year ago. Then it became obvious that he was in failing health and would improbably be able to take any further active interest in the business. This was therefore converted into a private company. Mr. Davies was born in Blakeney, Gloucester, in 1858. As a young man, he showed great natural bent and aptitude for mechanics, physics and electricity, and long before he was actively engaged commercially in engineering he spent much of his time and money in experimental and inventive work. In the early days of electric lighting in 1883 he became connected with the now extinct firm of Woodhouse and Rawson, of London, which took a very active part in developments at that time. Very quickly he became head draughtsman to the firm, and had charge of all its experimental work. In 1889 deceased left England and came to Johannesburg in charge of the electrical plant for three of the early gold mining companies, at the same time carrying on business as an electrical engineer. He put up a number of plants which in those days were considered important, and acted as consulting electrical engineer to the Johannesburg Lighting Company, the East London Town Council, Pretoria Lighting Company, as well as other concerns. He was a member of the Institution of Electrical Engineers, the Institution of Mechanical Engineers, the Council of the South African Association of Engineers and Architects, and an associate member of the Institution of Civil Engineers, as well as other institutions. His firm did a very large amount of important work in South Africa and Rhodesia. The funeral took place during the week, and was attended by all the leading mining and commercial men of the Rand.

* * * *

With reference to the revision of railway tariffs, which is being introduced with effect from 1st January, 1919, it has been decided that bunker coal rates (including the existing war surcharge of ten shillings per ton and terminal of sixpence per ton) shall be increased by 10 per cent. irrespective of the distance the coal is conveyed. Export cargo coal will be charged at the increased rates for bunker coal, but on receipt of proof that the coal has been exported as cargo overseas beyond South or South-West Africa, the existing rebate will be granted of ten shillings per ton. This will mean that export cargo coal will be increased by the same amounts per ton.

* * * *

The report of the Piggs Peak Company to March 31, 1918, states that a further sum of £9,228 has been expended mainly on the development and upkeep of the properties in Swaziland. Development operations were continued until the beginning of May of this year. Unfortunately work was much handicapped by abnormal rains during January and February, resulting in the flooding of the lower levels. In view of the position thus caused, the directors, after the most careful consideration, came to the conclusion that it was advisable to suspend operations. The development carried on since the last report covers 1,593 ft., of which 1,513 ft. were in the old section and 80 ft. in the

new section. In the new section good values have been met with in the west shute, and in the opinion of Mr. Jennings, the late manager, there is every evidence of good points becoming available in the 6th level. In the old section a payable lense of ore, 102 ft. long, has been disclosed in the eastern part of the mine, from which at least 4,000 tons of 9 dwt. rock can be extracted. In the 6th level payable ore has been opened up, with every indication of the values continuing downwards, the discoveries here, in the opinion of Mr. Jennings, form the apex of another lense, the major portion being below the level. A further lense has been disclosed in the part of the mine known as the Blacksmith's shute. The developed ore reserves are estimated by the manager as 29,500 tons—13,500 tons of 8.5 dwts. and 16,000 tons of 4 dwts. The farming and cattle breeding operations have made satisfactory progress. The accounts show a loss for the year to March 31 of £3,228, converting a credit balance brought forward into a debit of £8,436.

* * * *

Home papers to hand by the mail contain references to the death and funeral of Capt. Jack Barnato, R.A.F., elder son of Mrs. and Capt. Jack Barnato, the late Mr. B. I. Barnato, whose death from pneumonia occurred recently, at the age of 24. The late Capt. Barnato was educated at the Charterhouse and Cambridge, and notwithstanding the fact that he was a millionaire, joined as a private in the U.P.S. at the outbreak of the war. He later transferred to the R.N.A.S., and was one of the four airmen who bombed Constantinople. His career in the Air Force (writes a *Cape Times* correspondent) was one showing remarkable ability, and by his constant daring succeeded in many dangerous exploits. He was frequently mentioned in despatches, especially for his Constantinople success. He married on October 13 of last year Dorothe, the only daughter of Mr. and Mrs. Joe Lewis, of London and South Africa, their friendship dating from childhood days. A keen motorist, the knowledge of which technicalities stood him in great stead as an airman, the late gallant officer was held in the highest regard by all with whom he came in contact, his kindly and genial manner, combined with a very charitable nature, making him beloved by all who knew him.

* * * *

The Registrar of Companies issues the following notice: "This office being an office of record, business should be transacted as far as possible personally and not by correspondence. On and after the 1st day of December, 1918, all documents relating to an application for the registration of a company, notices of increase of capital, and copies of extraordinary or special resolutions, must be lodged in this office through a local agent, whose duty it will be to submit the documents personally and attend to their completion. No documents will be accepted unless they are complete in every respect. Searches must be made personally or through an agent."

* * * *

Mr. W. L. Hichens, Chairman of Cammell Laird & Co., Ltd., lectured on "The Functions of the Government in Relation to Industry" at Saddlers' Hall, Cheapside, in mail week, under the auspices of the Industrial Reconstruction Council. "Just as we were unprepared for war in 1914," said Mr. Hichens, "so now in 1918 we are unprepared for peace. We muddled into war, and we shall muddle into peace. Not until we find ourselves wallowing in a Serbian bog of confusion shall we bestir ourselves, and then we shall damn the politician and make the best of a bad job." The list of industrial activities which the State might assume as a part of its reconstruction programme was, said Mr. Hichens, formidable. It would be the height of folly to allow the Government to embark on these new ventures while their own house was in a state of grave disorder. State trading tended to create international complications, and increased the risk of war. Economic problems would probably bulk large at the peace conference,

and it was to be hoped that an attempt would be made to define the limits within which State intervention in matters of foreign trade was justified. State trading on an extensive scale would create a large army of Civil Service voters, who, in exercising the franchise, might find it difficult to forget that their material prospects could be better promoted by one candidate than another. A Government was handicapped, from a business point of view, by its responsibility to Parliament and the public. "The fact is," declared the speaker, "State management on sound commercial lines, 'a business Government,' are parrot-cries incapable of realisation so long as Parliamentary control remains a reality, and so long as the Party system continues." He did not suggest, however, that Civil Service administration was less efficient than business management. Competition was, of course, eliminated by State trading, which introduced a rigid uniformity of administration resulting in stagnation. By itself entering the arena of trade the State lost the detachment and impartiality which were expected from the ultimate controlling authority. He suggested that the primary function of the Government in relation to industry was to determine the conditions under which industry should be conducted by private individuals, firms, or corporations, and to see that these conditions were carried out. It was important that employers and employed should, in the first instance, hammer out their differences among themselves, but the final decision must rest with the Government.

* * * *

At last week's meeting of the Johannesburg Chamber of Commerce the president (Mr. F. C.

Trade with Sturrock) moved the patriotic resolutions
Germans. sent forward by the Executive of the

Chamber. Dealing with them, he said that the committee was also at work on resolutions regarding the trade position with Germany, and it might be likely that resolutions on that subject would be placed before the Chamber for consideration at a later date. Continuing, he remarked: It seems to me that these questions, which are economic in their nature, must be looked at from two points of view. We desire that resolutions such as we are considering to-day shall be given effect to; firstly, that Germany may be punished for her wrong-doing, and secondly that the safety and strength of our own Empire may be maintained for the future without the constant menace of an aggressive and ill-disposed neighbour; and it is from this second standpoint that I would emphasise the importance of our taking action to safeguard the future of ourselves and our country, and taking that action now. The question of how far we can go in regard to the post-war position is, of course, largely contingent on the peace conference and the conditions imposed upon us then. There will be no thought but to carry out loyally the terms agreed to by the united Governments of the Allies, for what England and France agree to, with all they have sacrificed to attain this consummation, we, who have been able to do so little, can have no quarrel. On the other hand, in matters of purely domestic concern it is only right that we should make our views known and that we should proceed to order our own house in our own way so far as the German people and German trade are concerned. It will be agreed, I think, in the words of this Chamber's report of March 30, 1916, that "a return to pre-war conditions in regard to trading with enemy nations would be contrary to the best interests of the Empire." We should therefore affirm, in so far as such trade is concerned, the resolutions already put forward by this Chamber. One of the most effective ways of combating German trade will be by cultivating the resources and trade of our own Empire, and we should urge upon the Imperial and Dominion Governments the necessity for close commercial and industrial co-operation to that end. Steps should be taken to encourage in all parts of our Empire the production and utilisation of the raw materials available under such legislative safeguards as will ensure that never again will important British industries be brought under the control of foreign capitalists.

TOPICS OF THE WEEK.

DE BEERS AND THE DIAMOND INDUSTRY

THE speech made by Sir David Harris at the annual meeting of De Beers last week was at once a comprehensive record of the progress of that great corporation during the year and an authoritative review of the diamond industry as a whole. A full report of the meeting appears in another part of this issue, and it merits the careful study of everyone interested in the industrial progress of this country. It will be seen that while the sales of diamonds were a little less than in the year preceding, the diamond market, thanks to the policy of control, remained firm, and prices advanced, to the benefit not alone of the shareholders in De Beers and the other leading producing companies, but equally of the smaller concerns and the River diggers, who, despite an unrestricted alluvial production, reaped the advantage of the enhanced value of their finds. That the shareholders of De Beers Company, notwithstanding the lessened production and sale by the company, have every reason to be satisfied with both demand and prices, will be apparent from the financial results of the year. The war period has been one of unprecedented difficulty, and few would have ventured to anticipate, when it began, that its closing stages would have seen the diamond industry in so eminently strong and satisfactory a position as that in which it stands to-day. This gratifying position, as the speech points out, is attributable to one circumstance, and one only—the policy of regulating sales to the demand. In further pursuance of the policy referred to an important step has been taken by the creation of a "reserve for the stabiliment of the diamond trade," for which purpose a sum of £1,576,526 has been set aside, representing amounts which have been used from time to time for the purchase of shares in other diamond mining companies and kindred interests with the object of consolidating the industry and preventing diamonds being put on the market in excess of the demand. The object-lessons of the war period, and subsequently of the disastrous epidemic which has recently worked such havoc in the mine compounds and among the European residents of the diamond fields, have demonstrated more clearly than ever the need of providing against the special and peculiar risks of mining by establishing and maintaining reserves on a sufficient scale to enable the industry to be kept going during any future emergency that may have to be faced. That the creation of this substantial further reserve will in every way add materially to the strength of the company and the security of the diamond industry is obvious, and shareholders will no doubt welcome the additional evidence thus afforded of the directors' conservative policy. It is also noteworthy that the company's total holding in war loans now amounts to £3,203,000. If we take into account all that the company has done in other ways, such as enabling those of its employees who were qualified for active service to go to the front, its aggregate contribution for war purposes is one it may well be proud of. The chairman's speech gives particulars of the immense sums which the Union Government is receiving from the industry by way of taxation, and contains in this connection some entirely justifiable criticisms as to the methods pursued in levying taxation on mining companies. The chairman points out that since 1907, covering a period of eleven years, the company paid dividends for seven years only, while for four years the ordinary shareholders received no return whatever on their investments. Yet facts like these are entirely ignored when taxation schemes are drafted, and the deferred shareholders of De Beers Company have been called upon to contribute in taxation no less than 33 per cent. on the dividends declared during the past financial year. The speech bears testimony to the valuable services which have been rendered to the mining industry, not only in this country, but in Australia, during the war period, by the De Beers Explosives Works. The practical importance of such facilities is certainly appreciated by all mining men. For the rest, the speech is packed with facts and figures that reflects the all-round progress of the company and the industry in a year of exceptional trial and stress.

CURRENCY COMMITTEE'S REPORT ON THE GOLD QUESTION.

No Resumption of Gold Circulation in the United Kingdom—Principle of Bank Act to be Maintained—Summary of Conclusions.

The first interim report of the Committee on Currency and Foreign Exchanges After the War, of which Lord Cunliffe, Governor of the Bank of England, is Chairman, came out in mail week. The following is the summary of the conclusions of the Committee:—Before the war the country possessed a complete and effective gold standard. The provisions of the Bank Act, 1844, operated automatically to correct unfavourable exchanges and to check undue expansions of credit. During the war the conditions necessary to the maintenance of that standard have ceased to exist. The main cause has been the growth of credit due to Government borrowing from the Bank of England and other banks for war needs. The unlimited issue of currency notes has been both an inevitable consequence and a necessary condition of this growth of credit. In our opinion it is imperative that after the war the conditions necessary to the maintenance of an effective gold standard should be restored without delay. Unless the machinery which long experience has shown to be the only effective remedy for an adverse balance of trade and an undue growth of credit is once more brought into play there will be grave danger of a progressive credit expansion, which will result in a foreign drain of gold, menacing the convertibility of our note issue and so jeopardising the international trade position of the country.

THE GOLD STANDARD.

The pre-requisites for the restoration of an effective gold standard are:—(a) The cessation of Government borrowing as soon as possible after the war. We recommend that at the earliest possible moment an adequate sinking fund should be provided out of revenue so that there may be a regular annual reduction of capital liabilities, more especially those which constitute the floating debt. (b) The recognised machinery—namely, the raising and making effective of the Bank of England discount rate—which before the war operated to check a foreign drain of gold and the speculative expansion of credit in this country must be kept in working order. This necessity cannot, and should not, be evaded by any attempt to continue differential rates for home and foreign money after the war. (c) The issue of fiduciary notes should, as soon as practicable, once more be limited by law, and the present arrangements under which deposits at the Bank of England may be exchanged for legal tender currency without affecting the reserve of the Banking Department should be terminated at the earliest possible moment. Subject to transitional arrangements as regards currency notes and to any special arrangements in regard to Scotland and Ireland which we may have to propose when we come to deal with the questions affecting those parts of the United Kingdom, we recommend that the note issue (except as regards existing private issues) should be entirely in the hands of the Bank of England. The notes should be payable in London only and should be legal tender throughout the United Kingdom.

THE NOTE ISSUE.

As regards the control of the note issue, we make the following observations:—(1) While the obligation to pay both Bank of England notes and currency notes in gold on demand should be maintained, it is not necessary or desirable that there should be any early resumption of the internal circulation of gold coin. (2) While the import of gold should be free from all restrictions, it is convenient that the Bank of England should have cognisance of all gold exports, and we recommend that the export of gold coin or bullion should be subject to the condition that such coin and bullion has been obtained from the Bank for the purpose. The Bank should be under obligation to supply gold for export in exchange for its notes. (3) In view of the withdrawal of gold from circulation we recommend that the gold reserves of the country should be held by one central institution and that all banks should transfer any gold now held

by them to the Bank of England. Having carefully considered the various proposals which have been placed before us as regards the basis of the fiduciary note issue, we recommend that the principle of the Bank Charter Act, 1844, should be maintained—namely, that there should be a fixed fiduciary issue beyond which notes should only be issued in exchange for gold. The separation of the issue and banking departments of the Bank of England should be maintained, and the weekly return should continue to be published in its present form. We recommend, however, that provision for an emergency be made by the continuance in force, subject to the stringent safeguards recommended in the body of the report, of Section 3 of the Currency and Bank Notes Act, 1914, under which the Bank of England may, with the consent of the Treasury, temporarily issue notes in excess of the legal limit. We advocate the publication by the banks of a monthly statement in a prescribed form. We have come to the conclusion that it is not practicable to fix any precise figure for the fiduciary note issue immediately after the war.

A CENTRAL GOLD RESERVE.

We think it desirable, therefore, to fix the amount which should be aimed at as the central gold reserve, leaving the fiduciary issue to be settled ultimately at such amount as can be kept in circulation without causing the central gold reserve to fall below the amount so fixed. We recommend that the normal minimum of the central gold reserve to be aimed at should be, in the first instance, £150,000,000. Until this amount has been reached and maintained, concurrently with a satisfactory foreign exchange position for at least a year, the policy of cautiously reducing the uncovered note issue should be followed. When reductions have been effected, the actual maximum fiduciary circulation in any year should become the legal maximum for the following year, subject only to the emergency arrangements previously recommended. When the exchanges are working normally on the basis of a minimum reserve of £150,000,000, the position should again be reviewed in the light of the dimensions of the fiduciary issue as it then exists. We do not recommend the transfer of the existing currency note issue to the Bank of England until the future dimensions of the fiduciary issue have been ascertained. During the transitional period the issue should remain a Government issue, but new notes should be issued, not against Government securities, but against Bank of England notes, and, furthermore, when opportunity arises for providing cover for existing uncovered notes, Bank of England notes should be used for this purpose also. Demands for new currency would then fall in the normal way on the Banking Department of the Bank of England. When the fiduciary portion of the issue has been reduced to an amount which experience shows to be consistent with the maintenance of a central gold reserve of £150,000,000, the outstanding currency notes should be retired and replaced by Bank of England notes of low denomination in accordance with the detailed procedure which we describe.

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WRIGHT'S ROPES

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NEW BRITISH METAL CORPORATION.

Full Details—Drastic Precautions Against Any Enemy Taint—Personnel of Directorate.

THE British Metal Corporation, Ltd., which has recently been the subject of questions in the House of Commons, has been registered at Somerset House with a nominal capital of £5,000,000 in 500,000 shares of £10 each. The papers were presented by Messrs. Ashhurst, Morris, Crisp and Co., solicitors, who certify that no persons had consented to act, or had been appointed, as directors to November 1, the day on which the papers were presented for registration.

The objects as defined in the memorandum of association are in very usual form, power being taken to buy, sell, manufacture, crush, smelt, calcine, refine, dress, amalgamate, manipulate, prepare for market, and deal in ores, metals, minerals, mineral substances, and similar products, to carry on any other metallurgical operations, and to act as capitalists, financiers, promoters, concessionaires, bankers, merchants, shipowners, ship and insurance brokers, freight contractors, wharfingers, etc. The signatories to the memorandum of association (each subscribing for 1,000 shares) are: Cecil R. Rudd, 7 Gracechurch Street, E.C., metal merchant; C. W. Fielding, 3 Lombard Street, E.C., merchant; Chas. Sale, 21 Old Broad Street, E.C., merchant; Vivian H. Smith, 22 Old Broad Street, E.C., merchant; A. J. H. Smith, Milburn House, Newcastle-on-Tyne, merchant and manufacturer; A. W. Tait, Basildon House, E.C., chartered accountant; W. L. Tennant, 9 Mincing Lane, E.C., merchant. The minimum cash subscription on which the directors may proceed to allotment is fixed at seven shares. The company may pay a commission not exceeding 10 per cent. to any person subscribing or procuring subscriptions for shares. Share warrants to bearer are prohibited.

No share may, without the consent of the Board of Trade, be held by any enemy or by any member in trust for, or on behalf of, or in any way directly or indirectly at the disposal of or under the control or directions of any enemy or enemy State, or enemy corporation or corporation under enemy control. The directors may not, without the consent of the Board of Trade, allot any shares or register any transfer of shares the allotment or registration of which would cause more than 40 per cent. of the total issued share capital or more than 25 per cent. of the voting power to be held by foreigners, foreign corporations, or corporations under foreign control, or by any person holding shares in trust for or on behalf of or under the control or directions of any foreigner, foreign State, foreign corporation, or corporation under foreign control. They may also decline to register any transfer to a person who (although a British subject) may by resolution of the directors (which shall be final and conclusive) be declared to be an undesirable person to admit to membership, on the ground that such person is, in the opinion of the directors, subject to enemy influence.

No enemy may be a director or alternate director, and not less than three-fourths of the board (including the chairman) must at all times be British subjects resident in the United Kingdom. The word "director" includes any member of any local board, committee of management, or other like body. "Enemy" means a citizen or subject of any State which was on January 1, 1917, at war with this country. "Enemy corporation" means any corporation incorporated in and subject to the laws of any enemy State. "Corporation under enemy control" means (a) a corporation of which a majority of the directors are enemies, (b) a corporation of which a majority of the votes are held by enemies or under enemy control, (c) a corporation which is by any other means under the control of enemies, an enemy State, or enemy corporations, (d) a corporation the executive of which is a corporation within (a), (b) or (c). "Foreigner" means every person, other than an enemy, who is not a British subject. "Foreign corporation" means any corporation (other than an enemy corporation) which is not incorporated in and under the laws of and has not its principal place of business in some part of the British Empire. The definition of "corporation under foreign control" is on

similar lines to that of "corporation under enemy control." "Shares" include any securities carrying any power of voting with respect to the management of the company.

Subject to any special terms on which any shares may be issued, or may for the time being be held, each £10 share confers one vote. The number of directors is not to be less than three nor more than 10. The Treasury has the permanent right to be represented by one director. The first directors are to be appointed by the subscribers to the memorandum of association. The qualification of a director (except the Treasury nominee) is £5,000 shares. The remuneration of each director is to be £500 per annum, with an additional £500 for the chairman, and the board is also to receive collectively 5 per cent. of the balance of net profits remaining in any year after payment of 10 per cent. dividend. The directors may borrow or raise money and secure the same by the issue of debentures, debenture stock and other securities, provided that they may not, without the sanction of a general meeting, borrow or raise any sum which will make the amount outstanding exceed the issued capital for the time being. No notice of situation of registered office was filed with the original papers.

Mozambique Industrial.

NEW COMPANY WITH £400,000 CAPITAL.

THE Mozambique Industrial and Commercial Company, Ltd., was registered on November 1 in London with a capital of £400,000 in £1 shares, to carry on all kinds of commercial, industrial, financial and other operations. There is an agreement with the Companhia de Moçambique. The subscribers (each with one share) include: L. Oury, 3 Thames House, Queen Street Place (director of Companhia de Moçambique); S. H. Sharpe, 3 Thames House, Queen Street Place, secretary; J. L. Langlands, 3 Thames House, Queen Street Place, registrar; E. G. Endicott, Delena, Grove Hill, South Woodford, commercial manager. The first directors are not named. The file number is 151,846.

Appointment of Works Manager, Umtali.

THE BEIRA AND MASHONALAND AND RHODESIA RAILWAYS invite applications for the position of Works Manager, Umtali, Rhodesia. Commencing Salary, £600 per annum, with usual staff privileges. Candidates, who must be conversant with modern workshop and locomotive practices, and have had good drawing office experience, are requested to forward their applications (giving full particulars of training, and stating age and whether married or single) not later than the 10th January, 1919, to:—

The Locomotive Superintendent,
P.O. Box 703,
BULAWAYO, S. Rhodesia.

MINING SHARES AFTER THE WAR.

World-wide Expansion of the Industry Predicted—Rand and Rhodesian Prospects Through London Spectacles.

THE following interesting forecast of the mining sharemarket appears in the London *Financial Times* to hand by this mail:

More than in almost any other section of the Stock Exchange is the post-war prospect of the mining markets a largely separate problem from that of the future of the industry on which they are based. The *obiter dictum* stands on record that "no mining share can be regarded as an investment." And when you come to "speculation"—waiving any question of the exact definition of that vexed term—the merest tyro in City affairs soon realises that share fluctuations are nearly always a case of discounting—more or less intelligently—the future, whether good or bad. It is a familiar Stock Exchange jibe that the surest way to kill speculative interest in a share is for the directors to start paying regular dividends upon it. This is, of course, an exaggeration, but contains the germ of truth that in mining speculation certainty, or apparent certainty, of outlook leaves "nothing to go for," whereas what the public generally wants is the *omne ignotum pro magnifico*. The public is, moreover, probably right in this instinct, though most members thereof could not, we imagine, give an intelligent reason for it. The truth is, however, that once a mining company is an established success and to all appearances somewhere near its zenith of prosperity its shares are—speaking quite generally—best avoided by those not in very close touch with developments on the property and thus able to judge when the inevitable decline, or at best a temporary bad time, is about to set in. The golden rule in speculation in mining or any other more or less risky shares is, of course, to buy sound, or fairly sound, shares when everybody else is selling for purely extraneous reasons and to sell when the public is "on the feed." Anyone who had been bold enough to act on this theory in the winter of 1914 could have been a millionaire by now. The insider sells discreetly all the way up on a rising market; the foolish outsider follows only too often the reverse policy—and, naturally, is left to "hold the baby."

METAL MINING DOES NOT PAY.

It is only in the rarest instances that it pays to lock away a mining share certificate in your safe and forget it. Almost the only excuse for doing so is if you have sold enough of your original purchase at a sufficiently large profit to leave the balance standing you in at nothing, or a merely nominal cost. But as a rule the quicker in reason mining shares are turned over the better. In two picturesque phrases—"Even Methuselah died" and "Every mine must end one day as a mere hole in the ground"—Messrs. T. A. Rickard and F. A. Govett have summed up crisply enough the reason for the policy we have suggested, and the reason incidentally why constant readers of our "Answers to Correspondents" column only too frequently regard us as incorrigible pessimists. If we are pessimists, then so is every intelligent operator in the mining markets, for none that we know of would leave any more money than he could help tied up in these sections through the long periods of inactivity which recur in almost regular cycles. The fact is that "by and large" non-ferrous metal mining does not give even a reasonable return—especially when allowance is made for amortisation—on the capital invested in it. An analysis was taken out privately during the war of the results for a decade of several of the chief groups of companies. The depressing showing made by this analysis was that, within ten years, of nearly 1,500 companies, with a nominal capitalisation of over £300,000,000; over 1,000 had died, or sufficient to wipe out more than half the capital, while on only about 12 per cent. of this moiety had dividends been paid during the decade. Of the balance of nearly 400 companies still in existence at the end of the decade over half had paid substantial dividends during the period, while of the remaining moiety somewhat under half had made fair distributions and the rest had made no return whatever to

shareholders. The broad result disclosed was that of some 1,500 companies during a period of ten years less than 250 had paid substantial dividends, and even of these 250 about 40 had come to the end of their tether.

A WORD OF WARNING.

We have dealt unusually frankly and at perhaps undue length with the speculative nature of mining shares partly for the reason that it seems desirable to lay stress on this aspect of the subject for the benefit of those novices to the Stock Exchange who may have attached and be attaching too great importance to the unjustifiably high quotations many descriptions have reached of recent months, and partly for the reason that we incur no risk at this juncture of assisting the unpopular bear—who is not dead, but only sleepeth. When he is allowed to awake again from his long hibernation we shall once more see free markets on the Stock Exchange, and in all probability a strong curb put on the unhealthy activities of those unscrupulous individuals who have apparently acted recently, with some success we fear, on the theorem that, so long as you keep pushing the price of a share up, more and more of the uninstructed public will be tempted to buy it, quite irrespective of intrinsic merits or of any dividend possibilities. The "Supplementary Official List" is a very useful war-time innovation which most responsible people desire to see continued indefinitely, but many leading members of the Stock Exchange and others are much exercised in mind as to how it can be purged of rubbishy shares without the Committee exercising an extreme censorship or giving something in the nature of a testimonial to those descriptions whose markings are allowed to be included in it.

THE REMOVAL OF WAR'S HANDICAPS.

Turning from general market conditions to the outlook for the mining industry itself, it is a relief to be able to feel much more optimistic as regards that aspect than that of the early post-war purely Stock Exchange point of view. There is hardly a decent mine in the world that should not benefit sooner or later from the advent of peace and the consequent release of capital, transport, labour and material required for the expansion of the industry. Immediately, perhaps, the gold mining industry stands to gain most, but however views may differ as to the early prospect for the world-market in base metals, there is no doubt that over a period of years every ton of copper, lead, tin, zinc, etc., that can be produced will be readily absorbed, and that the bigger producers, at all events, will soon breathe much freer owing to their relief from the innumerable handicaps of

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war-time, even if they do not get such abnormal prices for their output. The mining industry in all its branches has supplied a noble quota to the Allies' fighting strength, its contribution of technical experts—from the inventive geniuses attached to headquarters and research staffs to the patient and life-careless "tunneller"—being possibly even more important than its contribution of those metals indispensable for munitions. Mining engineers, at all events, will go back to their ordinary avocations like giants refreshed, with their minds broadened and with added experience of handling men. Whether every mining "private" will be content to settle down in his former lowly rank and with his former pay and conditions in metalliferous or coal mines may be more doubtful. But mostly, no doubt, he will be only too pleased to be back in his old work again. Moreover, since mining directors and managers have, like other people, learnt much from the war, doubtless those properties which had formerly lagged behind the march of world-progress will by new methods and scientific adaptation gradually achieve a higher rate of production per man, and consequently be able to pay better wages and improve working conditions.

GOLD MINING AND THE RAND.

Though opinion is not absolutely unanimous as to the theoretical economic value of the gold mining industry, and as to whether it is at bottom worth to the world all that it absorbs in the way of capital, labour and materials, yet there is no doubt that as things are it is by far the most important of the British Empire's non-ferrous metal industries, and that it has played a great part in maintaining the Allies' financial strength through the four years of the world-conflict. In the early days of the war it reaped a fair reward for its labours, but the increasing handicaps of recent years have, as has been proved *ad nauseam* in our columns and elsewhere, weighed very unfairly upon it. Whether Lord Inchcape's Committee will recommend any relief to the Empire's low-grade producers to tide over the transition of working conditions to something like a normal basis, and whether and how far any such recommendations will be acted upon by Government or Parliament, it is unfortunately quite impossible to predict with any certainty as yet. But it seems possible that if any scheme of State assistance were to be coupled with any species of State control, or increased local taxation on the richer gold mines, then the gold industry might fare better in the long run if left to solve its own difficulties. The immediate problem as regards the Rand—which produces two-thirds of the Empire's and over two-fifths of the world's annual gold output—is rather one of labour and of materials for accelerated development operations than of working costs pure and simple. Unfortunately the influenza epidemic has temporarily accentuated the native labour scarcity throughout Africa's mining fields and probably made still more remote the possibility of obtaining permission to re-introduce tropical "boys" to the Rand. The return of the natives employed on Army work may alleviate the position, but it will not cure it. In the long run the Rand will, many people think, have to come round to the idea of importing "poor whites" from Europe, and if they in due time left the mines for agriculture and trade and were replaced by fresh immigrants, such a procedure might supply the increased white population which Rhodesia and the Northern Transvaal so sadly need.

CENTRAL RAND'S DECLINE—EASTERN RAND'S ASCENSION.

The decline of the old Central Rand properties has been greatly expedited and the rise of the younger Eastern Rand has been slightly retarded by war handicaps, but no conceivable outside assistance—nothing short of a remarkable recovery in developments in depth—will, in our judgment, recreate sustained speculative interest in the former, while the latter are now so strong that they can only stand alone, but their success is rapidly drawing fresh capital into the Eastern Rand. Already several of what are called State mines—because the Union Government participates in profits with shareholders—have been formed, and one, the Government (Modder) Areas, has achieved wonderful prosperity. Some people look for a boom in new Eastern Rand

flotations at a comparatively early date after the war, but if this does come along the buyer must be wary of calculations founded on the results of, say, the New Modderfontein, nearly the whole of whose reef has so far been payable. Further south, in, for instance, the Brakpan and Springs mines, rich patches are interspersed with unpayable ones in the proportion of, say, half and half. Nevertheless, although the Eastern, like the Central, Rand will doubtless have its lean years as well as its fat ones, it promises to be a wonderful goldfield. Sir Robert Kotzé, the South African Government Mining Engineer, has estimated that it will produce at least £450,000,000 worth of the precious metals, and others put the probable output much higher still, possibly more than the £600,000,000 which the whole of the Rand has produced to date.

RHODESIA AND THE CHARTERED COMPANY.

In Rhodesia we seem likely, apart from a few prominent exceptions, to hear less of gold mining and more of base metal, land and industrial development in the early years of peace. With the Colony likely to enter the Union at an early date, possibly at the same time as what was "German" South-West Africa, the Chartered Company—assuming that it remains in being—will be freed of its administrative burden and able to devote undivided attention to the development of the valuable assets it will retain. That the Chartered Company itself will be generously, or even adequately, rewarded by the Government for its thirty years of work and expenditure we, however, still gravely doubt in the light of the experience of the Niger and other formerly "chartered" companies. In the Belgian Congo the Tanganyika and the Zambesia Exploring Company's subsidiary, the Union Minière du Haut Katanga, have made splendid progress in copper production in the past few years, and there seems scope for great expansion after the war, especially when the Benguela Railway is completed. As regards land prospects in Africa, we think the recent talk of an early boom is premature and exaggerated. In Rhodesia each ex-soldier who may desire to settle will be expected to have a minimum capital of £1,000, and, *ceteris paribus*, no one should go in for agriculture in any other part of Africa without plenty of money and experience behind him. Big American capital seems likely to go into the Colony after the war, and should accelerate the progress of its mining and other industries, but those who imagine that another Canada can be built up in a day, or even a few years, or that enormous immediate profits are going to be made out of sales of land, new cattle ranches and so forth can have no conception of the tremendous spade-work still to be done.

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FIRST AID TO THE WOUNDED IN MINES.

Mr. Edgar Hall contributes the following to the *Queensland Government Mining Journal*:—"Among the manifold scientific investigations undertaken by the British Government as part of the war is that of the study of the part which bacteria play in the wounds and diseases of the soldier on active service. At the beginning of the war a bacteriological laboratory was established at a British base in France not far from the front, in charge of Sir Almroth E. Wright, F.R.S., etc., the most famous of living English bacteriologists. The work done there has led to discoveries of the highest value in the treatment of wounds and the diseases of modern warfare. In several matters former ideas have been upset and former treatment revolutionised. Among these one of the most important is the discovery that the value of antiseptics has been rated much too highly, and that what value they have has been hitherto largely misunderstood. It is well known that the great danger in all cases of wounding lies in the rapidity with which the wound becomes infected by malign microbes before it reaches surgical aid. Hence the importance of first-aid treatment. This is a matter of great importance everywhere, but especially at mines, which only too often are far from surgical skill. There are few mines now without facilities for first-aid treatment, and it is important that the latest and best methods should be known among miners. In an article appearing in the *Lancet* of 15th June, 1918, by Sir Almroth Wright and his assistants (Drs. Fleming and Colebrook), and since published in pamphlet form, on "The Conditions under which the Sterilisation of Wounds by Physiological Agency can be obtained," the result of their investigations is shown to have an important bearing on this point, so urgent at mines. And fortunately the best treatment is simple. Formerly trust was placed on some antiseptic dressing, more often than not unavailable, or when available apt to be used in manner more harmful than beneficial. The antiseptic now recommended as the best in

these cases is our oldest antiseptic friend, common salt, found everywhere, even in the prospector's tent. The article referred to says:—"Among the problems of treatment there is one which up to this has been omitted from consideration. This is the question whether anything can be done to restrain the bacterial infection in the case of patients brought in off the field who have large open wounds and cannot for the time being receive full operative attention. We believe that a hyper-tonic salt solution fulfills all the requirements of a (temporary) dressing." The 'saline solution . . . prevents that drying up of the wound and shutting down of the surface capillary circulation which must produce sloughing of the wound surface. And . . . the saline solution will, so long as it remains sufficiently concentrated, inhibit the growth of (malign) microbes in the exudation.' The first-aid treatment recommended as 'all that would be necessary' is to cover the whole wound surface with several layers of gauze soaked in a 5 per cent. solution of salt; to back this with a plugging of gauze steeped in saturated salt solution and then to cover with an impervious bandage. Nothing could be simpler. All that is necessary at a mining camp is to have a supply of cotton wool, or lint, or any of the prepared absorbent bandages, and a large bottle full of water in which more salt has been placed than will completely dissolve. When the wound has to be dressed, part of the clear solution is taken and diluted with seven times its volume of clean water, and the cotton wool soaked in the weak solution thus obtained and applied to the wound in sufficient quantity. On this is placed a thick layer of the lint soaked in the saturated salt solution direct from the bottle; and finally the whole is covered and kept in place by a bandage of some waterproof material which will preserve the dressing from drying until the patient reaches the surgeon. There is no need that there should be kept at a mine any other antiseptic for the treatment of wounds; in fact, the application of any other antiseptic than common salt should be left to the surgeon.

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VAAL RIVER DIGGERS' UNION ANNUAL REPORT.

Review of an Eventful Year.

THE following is the report submitted by the General Secretary at the 14th annual congress of the Vaal River Diggers' Union, held at Barkly West on Thursday, 12th inst. :—

To the President and members of the Vaal River Diggers' Union: Gentlemen,—I have much pleasure in submitting my report upon the work of your union since last congress. Native Pass Law: Following upon a resolution of last congress an official from the Native Affairs Department visited the district, and since February this year native labour regulations under Proclamation 31 of 1918 have been in force. It is perhaps too early at this date to record what benefit accrues from this extra £2,000 per annum paid by the individual digger. Police affairs: Shortly after congress the Commissioner of Police, Colonel Truter, C.M.G., visited the diggings in company with the Chief of the Diamond Detective Department; various interviews with officials of your union and others resulted in a somewhat better working with the police in carrying out the requirements under provisions of the Diamond Trade Act on the river. The Officer Commanding the district has, under great difficulties, endeavoured to meet all requirements. At present, however, unanimous feeling exists that the control of the police on the river diggings should be vested in the Chief of the Detective Department in his capacity as Deputy Commissioner of Police. Magisterial Report, 1916-17: Resultant upon adverse criticisms upon the conditions of life on the river diggings contained in the Magisterial report, 1916-17, considerable controversy in the Press arose, and feeling along the river diggings ran very high. Subsequently a strong deputation waited upon the Minister of Justice at Capetown in February last. The Minister found that the gross charges made could not be substantiated, and accordingly gave publicity and complete refutation thereto, and had the official in question removed from the district. Cordial relations exist to-day between the Resident Magistrate of Barkly West, all his staff, and the community, whilst in the recently cut-off magisterial area of Klipdam the Resident Magistrate there is unanimously acclaimed the right man in the right place. Mosesburg: Diamonds approximating £40,000 have been found on the original farm Mosesburg—still the ground remains unproclaimed, and feeling on the lower river is at present strained to the highest pitch of resentment against this inexplicable delay in proclaiming this proved diamondiferous ground. A deputation from the United Lower River Diggers' Committee to Pretoria in July last was assured that Government intended to have this ground thrown open. The outcome of Government's decision is anxiously awaited. Proclamation of new ground: New fields proclaimed since last congress have been an extension of the Longlands diggings running on to Borrell's Kopje, proclaimed under the titles of "Last Hope" and "Borrell's Kopje," in April last, and "Kareepan," 11,000 morgen, between Holpan and Harrisdale, in October last. Breakwaters: The year has been an unprecedented one as far as floods are concerned; at Elandsdrift, Barkly West, Good Hope, and Winter's Rush breakwaters were completed, but work had scarcely started when heavy floods came along, washing everything away, and all hopes of restarting work had to be abandoned. The losses through breakwaters this year would approximate £5,000. Output: The output of the alluvial diamond diggings in Griqualand West for the ten months ended September, 1918, totals 102,078 carats, realising £400,952, averaging £6 10s. per carat. Officials: Your Inspector of Claims, Mr. J. T. Audas, who was compelled to go on sick leave for some considerable time owing to an affliction of his eyes, brought on whilst in the execution of his duty, has now happily returned, though not yet wholly recovered. We have also to record the departure of Chief Clerk Mr. F. J. Matthews, sometime Acting Inspector of Claims. His six years amongst us marks a period of usefulness and improvement, and diggers both of the upper and lower river, whilst regretting his unpreventable departure, wish him every success in his new

sphere to promotion in Pretoria. The work of administration falls very hard just now upon the diminished staff, and diggers in the various camps must meanwhile bear with fortitude little inconveniences it is impossible to remedy on the instant. Diggers' Committees: Since congress your four Diggers' Committees have each undergone two re-elections, and the seats, with the exception of a few in one committee, were secured to your union members. Recognition of the advantages to be gained by centralisation is more general to-day along the river than heretofore, and the hope is expressed that the present dissipation of force and energy, as represented in scattered Diggers' Committees, may yet be obviated by their being eventually amalgamated and centralised. Transvaal Diggers' Union: Before the war your executive were in communication with prominent diggers in the Transvaal with a view of extending your union's propaganda to those fields, but the intervention of the war, the set-back to the industry, and other causes, resulted in a deadlock. Since last congress, however, continuous correspondence and frequent visits from your union's officials to the Transvaal fields have brought about the happy formation of a Diggers' Union in the Transvaal, with a strong executive committee, embracing the various diggings from Klerksdorp to Fourteen Streams. At the foundation conference held at Bloemhof in September last there were some 200 present, amongst whom were prominent officials from various departments and your union's representatives. This work may be regarded as a first step towards facilitating consolidation of the existing diamond laws, whilst the subject of affiliation or of unification of these two Diggers' Unions is undergoing consideration. Rifle Associations: The ranks of the Rifle Association have been greatly reduced

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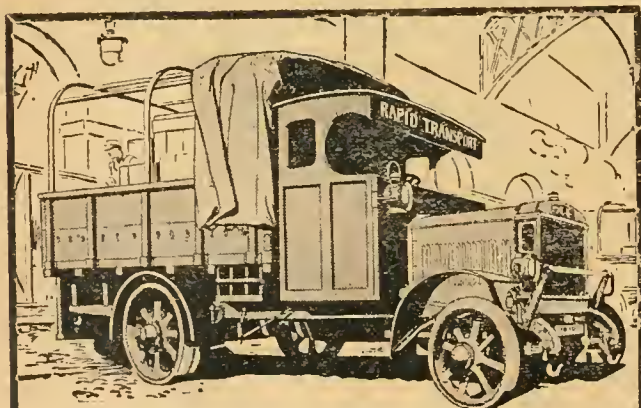
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owing to the large percentage of members being absent on active service, both in German East and overseas. The District Commandant, however, assembled his officers and men on 24th September, when a fairly strong and representative gathering held a shooting contest. Prizes were distributed by the popular District Staff Officer from Kimberley, and the marksmanship was of a very high order. The return of the men from the front will see a corresponding increase in the association's ranks. Barkly West Hospital: Your union's annual contribution this year to the Barkly West Hospital took the form of a general collection along the river, and resulted in the handing over of a cheque for £111 3s. 6d., or, with the Government subsidy, a sum equal to £277 odd. War Funds: At the present moment the total amount of the various collections in connection with the war funds is not procurable. In one camp alone at Holpan, with a population totalling only 573 souls, a sum of £577 odd was collected; the total of the collection along the river diggings would not be under £3,000. Burial Fund: This fund is now practically depleted, and unable to meet present calls upon it. An attempt to augment the fund by the sale of the "River Book" (by Messrs. G. Beet and T. L. Terpend) last year did not meet with the success anticipated, as the publishers were unable to issue the edition de luxe that would have given a balance over for the fund. The necessity of keeping this fund alive is under consideration, and will be taken up by your incoming executive. Epidemic: At the present moment it is not possible to give an accurate list of the deaths due to the recent epidemic. A full and comprehensive list will be published later; the only lists to hand and still open to revision are:—Wedburg, 4 Europeans, 129 natives; Windsorton, 6 Europeans, 2 coloured, 2 Indians, 120 natives; Klipdam and Holpan, 5 Europeans, 120 natives; Roslyn and Holsdam, 4 Europeans, 2 coloured, 24 natives; Good Hope, 1 European, 19 natives; Gong-Gong, 3 Europeans, 30 coloured, 63 natives; Niekerk's Rush, 2 Europeans, 10 coloured, 30 natives. It is to be hoped that

Government will act upon the resolution passed by the Barkly West Divisional Council on 13th ult., to the effect that "Government should bear the total cost in connection with the epidemic on the river diggings." Obituary: It is your union's intention later, when times are more propitious, to compile an obituary list of the river for the past four years, but some time must necessarily elapse before this can be done. Amongst those names obtainable we lament the death of the following: Eugene de Gay, A. Coqui, J. P. du Plessis, W. M. Fenton, A. Johanson (junr.), G. Keeble, P. Keogh, G. Oosthuizen, C. M. J. Moore, Chas. Pearson (senr.), F. M. Rosseau, G. Thompson, D. Viljoen (junr.), G. van der Westhuizen; and amongst the friends of your union—F. Oats, late chairman of De Beers; J. F. Wynne, an efficient and popular official of the Detective Department; Reg. Andrews; O. N. Haarhoff, late Town Clerk of Barkly West; and H. Timmerman, Vice-President, Transvaal Diggers' Union. Your union's sympathy is extended to all who have suffered recently through the epidemic. The President, Vice-President, and officials of your union have worked in harmony during their term of office, and their relations with all the Government officials of the various departments have been of a most cordial nature.

Consolidated Gold Fields.

Speaking at the annual meeting of the Consolidated Gold Fields last week, Colonel Lord Harris, chairman, announced the depreciation of assets for the year was £388,348, due to the fall in the market price of big mining shares. The policy to be adopted by the directors was to utilise the balance in reserve to meet further anticipated depreciation. Lord Harris expressed confidence as to the future because of the satisfactory position of liquid reserves, which, excluding unrealised or inner reserves, was 1½ millions sterling, including gilt-edged securities.



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THE WEEK IN THE SHAREMARKET.

Continued Weakness, with no Features of Interest.

PRICES eased off after the call on Friday and the market closed weak. The improvement in Modder East and their Options was of short duration. Saturday morning brought no relief. All the favourite stocks were again lower, and, with the exception of a few genuine Colonial orders, there was no disposition to deal. The Stock Exchange was closed on Monday. Business was somewhat more active on Tuesday morning, with a slight improvement in Government Areas, Springs, Van Ryn Deep and Sub Nigels. African Farms and the Modder East lot continued weak, especially the first named. At the opening on Wednesday, Springs Mines were in good demand, finishing at 67s. buyers. At the call they made an additional 6d. Modder Deeps have not retained for long their advance over Modder B's. The former were brought down to £7 10s. sales and sellers, at which figure their rival stands 5s. to the good. The other favourites showed little change, Van Ryn Deeps and Government Areas being firm, while Sub Nigels and Geduld Props were the turn lower. There was no improvement in Modder East or African Farms. In the smaller stocks Knight Centrals were to the good. Government Areas were the feature at the opening on Thursday, with buyers at 91s. 6d. At the call all the available stock at 91s. 9d. was taken up. Springs, for no apparent reason, fell back to 66s. 6d., after sales at 67s. before 'change. Rand Selection came better, as also Modder East, but the Options showed no improvement. The outside business for the week was a negligible quantity, the only sales being odd lots of Makganyene Diamonds and Monteños at 31s. 3d. and 23s. respectively. Buyers of Sakalavas at 5s. 6d. and dealers in Phoenix at 11d.—1s.

	Fri. 13th.	Sat. 14th.	Tues. 17th.	Wed. 18th.	Thurs. 19th.
New Boksburgs	1 0*	1 0	1 0	1 0*	1 0*
New Eland Diamonds	21 0*	23 0*	23 0*	24 0*	24 0*
New Era Cons.	10 6†	10 0*	10 0*	10 1½	10 0*
New Geduld Deeps	5 9*	5 9*	5 9*	5 9*	5 9*
New Heriots	13 0*	12 6*	12 6*	12 0*	13 0†
New Kleinfonteins	11 0*	11 0*	11 0*	11 3*	11 3*
New Modderfonteins	£26½*	£26½	£26½	£26½*	£26½
New States	20 0*	20 6*	20 1*	20 3	20 3*
Nigels	—	6 0†	6 0†	4 0*	—
Nourse Mines	16 6*	16 0*	16 0*	—	16 0*
Pretoria Cements	65 0†	62 0*	65 0†	62 6*	63 9
Princess Estates	2 6*	2 6*	2 6	—	2 3*
Rand Collieries	3 0*	—	3 3*	3 1*	3 6†
Rand Mines	—	—	65 0†	—	—
Rand Nucleus	1 7*	2 0†	1 9†	1 9	1 9*
Rand Selection Corp.	80 0*	82 0†	82 0†	81 0*	83 6*
Randfontein Deeps	5 6†	5 6†	—	5 3†	4 9*
Randfontein Estates	13 9*	13 9*	13 9*	13 9*	13 6*
Rooibergs	7 6*	7 6*	7 6	7 4*	7 6
Rodepoort Uniteds	2 1*	—	2 0*	2 0*	—
Ryan Nigels	3 0*	3 6†	3 3*	3 6†	3 0*
Shebas	1 3*	1 6	1 6*	1 6*	1 9†
Simmer and Jacks	—	—	6 0†	6 0†	—
Simmer Deeps	—	—	2 9†	2 9†	2 9†
S.A. Alkali	41 6	37 6	37 6	32 6*	40 0*
S.A. Breweries	34 0†	34 0†	34 0†	—	33 6†
S.A. Lands	6 11	6 1	6 1*	6 1*	6 1*
South Van Ryn	13 0*	13 0	13 0	12 3*	12 0*
Springs Mines	65 0*	64 9	65 0*	67 6	66 6
Sub-Nigels	27 3*	27 6*	28 0	27 9	27 3*
Swaziland Tins	31 0†	—	31 0†	31 0†	—
Transvaal Lands	23 6*	22 6*	22 6*	22 6*	22 6*
Transvaal G.M. Estates	13 6†	12 6*	12 6*	12 6*	12 6*
Van Ryn Deeps	70 3	70 0*	70 3	70 6	70 9*
Village Deeps	16 0*	16 0*	16 0*	—	15 0*
Western Rand Estates	—	—	2 1*	2 2*	—
West Springs	23 3*	23 6	23 3	23 3	23 0*
Do. Options	9 6*	9 6*	—	9 9*	—
Witbank Collieries	—	—	—	54 0*	—
Witwatersrand	19 0*	19 0*	19 0*	—	19 0*
Witwatersrand Deeps	13 9	13 3*	13 0*	13 0*	13 3*
Wolhuters	3 4*	3 4*	3 4*	3 0*	3 3*
Zaaiplaats Tins	15 3	15 4	15 8	15 1*	15 9
Union 5 per cent.	£101½*	£102†	£102	£102	£102½†

*Buyers. †Sellers. AOdd lots. BEx London.

The Gaika Company made a net profit for the year to June 30 last, after deducting depreciation, **Caika Gold.** £18,775, and £1,520 was brought in, making £15,295. A final dividend is paid of 2 per cent., making 5 per cent. for the year, less tax; forward, £1,620. The consulting engineer states that in the north section no further developments of importance have occurred, but in the south section an ore body has been located in the course of operations, which at the 5th level for a length of 225 ft. averages 19·4 dwts. over a width of 70 in. Since the close of the financial year the No. 1 winze from the 5th level has been continued to the 6th level, and cross-cutting carried out from that point. Sinking has recently been started from the east crosscut at 50 ft. down in the winze, and, according to the last cable advice, good values were obtained for the first 12 ft., when the reef gradually contracts, and low values only were obtained, the reef in the face at 18 ft. down becoming narrow and unpayable. The ore reserves at June 30 last were estimated at 80,000 tons, average assay value 13·1 dwts., against 85,831 tons and 12·9 dwts. at June 30, 1917. Crushed 38,554 tons, yielding 17,828·61 ozs. gold, value £76,569. Working costs and realisation charges, £59,560, leaving a working profit of £17,008, subject to depreciation, London charges, etc. Working costs, 29s. 10·79d. per ton, against 29s. 5·81d. for the preceding year.

Zaaiplaats Tin.

A dividend of 30 per cent. (1s. 6d. per share) has been declared by the Zaaiplaats Company.

	Fri. 13th.	Sat. 14th.	Tues. 17th.	Wed. 18th.	Thurs. 19th.
African Farms	15 2	15 0*	15 0*	15 1*	15 3*
Anglo-American Corp.	—	25 0*	—	—	30 0†
Apex Mines	7 1*	7 0*	7 0*	7 0*	7 9
Aurora Wests	8 0*	—	8 6*	8 6*	8 6*
Bantjes Con.	2 1*	2 2*	2 3	2 2*	2 2
Breyten Collieries	—	11 6*	11 6*	11 0*	12 0.
Brick and Potteries	3 9*	3 9*	—	—	3 9*
British South Africa	—	20 0*	—	20 0*	20 0*
Bushveld Tins	0 8*	0 8*	0 8*	0 8*	0 8*
Cassel Coals	—	5 6†	—	8 6†	—
Cinderella Cons.	—	5 0*	—	—	—
City and Suburbans	7 9	7 6	—	7 6*	7 6*
City Deeps	45 6*	46 0*	46 0*	46 0*	46 6
Clydesdale Collieries	21 0*	—	21 0*	21 0*	22 0*
Con. Investments	—	—	21 0*	21 0*	21 0*
Con. Langlaagtes	18 0*	—	18 0*	17 6*	17 6*
Con. Main Reefs	11 0*	11 3*	11 3*	11 3*	11 6*
Con. Mines Selection	—	25 0	—	—	23 6*
Coronation Collieries	50 0*	—	—	—	50 0*
Coronation Freeholds	1 3*	1 3*	1 3*	1 3*	1 3*
Coronation Syndicates	—	2 0	—	—	—
Crown Mines Deb.	£100*	—	£100*	£100*	£100*
Daggafontein Mines	22 6*	22 6*	22 6*	22 6*	22 9*
Do. Options	5 3†	5 3†	5 3†	5 3†	5 3†
East Rand Coals	2 3*	2 3*	2 3*	2 3*	2 3*
East Rand Deeps	0 11*	—	0 11	0 11	0 11*
East Rand Props.	5 9	6 0†	6 0†	5 0*	5 0*
East Rand Debentures	—	—	—	—	£65**
Eastern Golds	1 3*	1 3*	1 3*	1 3*	1 3*
Frank Smith Diamonds	3 6*	3 7†	—	3 6*	—
Geduld Props.	37 9*	37 9*	37 9	37 9	37 9
Glencoe Collieries	6 0*	6 0*	6 0*	6 0*	—
Glynn's Lydenburgs	25 0†	25 0†	24 0	24 6	24 0*
Government Areas	90 6	89 9*	90 0	90 6	91 9
Jupiters	5 0†	4 9*	4 9*	4 9*	4 9*
Klerksdorp Props.	—	3 0*	—	3 0*	3 0*
Knight Centrals	5 11	6 0	6 3	6 9	6 4
Knights Deeps	6 6*	—	6 6*	6 6*	6 6*
Lace Props.	10 7*	10 6	10 6*	10 6*	10 6*
Leeuwpoot Tins	26 6†	25 6*	25 6	25 3*	25 0
Lydenburg Farms	8 6	8 6*	8 9	8 9	8 8*
Modder B.	151 6*	152 6	153 0*	155 0*	157 0†
Modder Deep	£51 0*	£52 0	£52 0	£50 0	£51 0*
Modder Easts	20 0	19 6	19 3*	19 9*	19 9
Do. Options (3 years)	5 3*	5 3*	5 3	5 0*	5 1*
Do. Options (4 years)	6 7*	6 4*	6 4	6 2*	6 3
Hume Pipes	28 0*	28 6*	28 6*	28 0*	29 0*
De Beers Def.	£14½*	£14½	—	—	£14½*
Natal Navigation Collieries	21 0*	21 6*	21 6*	21 0*	—
National Banks	£14½*	£14½	—	—	£14½*

*Buyers. †Sellers. AOdd lots. BEx London.

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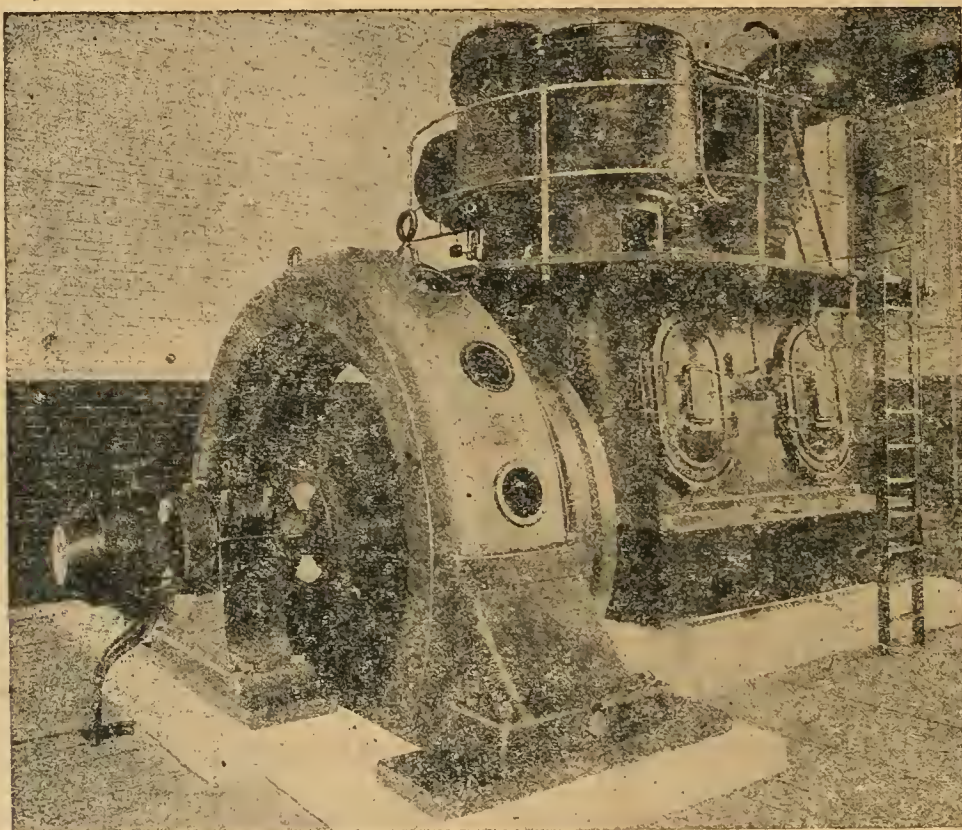
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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Chief Buying Office—British Manufacturers Inviting Orders—Trend of Business—More Natives Expected—Oils and Colours—Timber—Electrical Light Cutting.

BUSINESS is very quiet indeed on the Commercial Exchange. The chief buying office is still adopting the waiting policy and doing just sufficient to keep things together, which means putting out only sufficient indents for sorting up lines. During the war the chief buyer has somehow managed to please everybody, therefore Mr. Nethersole can well be congratulated, as trade jealousies are real difficulties in this workaday world. The mines may also be congratulated, as prices have been kept well under control and the system has been successful, thanks also to the Chamber of Mines and our own Government in using their commercial machinery in dealing with the British, American and maybe other Governments. No doubt there have been hitches and difficulties without end, but from a public outlook of the whole position, everything seemed to work very harmoniously. Nothing much can be ascertained about the prolongation of the chief buying office, but from hints and pointers here and there it seems it will not be long after peace is arranged before the various mine buyers come into their own again.

BRITISH MANUFACTURERS' ADVICES.

Important cable information has been received from several British manufacturers, that they are prepared to take orders for mining and other materials, as they have every chance of fulfilling them. From the meagre information received it is not altogether clear how far the British Government has taken the embargos off, but undoubtedly there are reservations. According to some, the British Government reserves the right to control shipping and constructional materials and also so far as can be learned the priority certificates are still being used, and as previously remarked these are still advisable for urgent cases. All this goes to show that the British Government and manufacturers are very much alive to the fact of retaining the trade so laboriously worked up in pre-war days, notwithstanding the underhand dealings of enemy competition.

THE TREND OF BUSINESS.

Business is very quiet indeed, which is not unusual at this season of the year, but it is marked on this occasion. This is not altogether surprising, as we are in the midst of holidays, stock-taking and the uncertainty of the future of the chief buying department. There are no real buyers in the market, as merchants are only getting sufficient to complete orders and not for extra stock. The drop in prices and the sharp curtailment of business when the armistice was signed, have not really improved, but there is a less nervous feeling. Things, however, will take some time to become normal as a lot of belated orders have to arrive from America. Most of these are at high values and may become troublesome as regards turning them over at a profit or, what is worse, a loss. This is at the moment the weak spot, as this material is coming on the top of fairly big stocks already in the Johannesburg warehouses, and the mines are almost out of the market for heavy goods, through using their reserves. Perhaps Johannesburg is not very different from other places, but undoubtedly there is little or no

cohesion here, therefore when trade is dead and dull from week to week holders will accept less for any decent line, but immediately there is a little genuine buying, prices stiffen at once, especially of late, as the chief buying office was credited with knowing exactly where the various stocks were located. Notwithstanding this unsettled state of things, as between the war and peace periods, there is an excellent impression existing amongst merchants that the mining industry will soon pick up again. Because now that General Botha is in London and in close touch with the British Government something may be done to ameliorate the position of the lower grade mines—in, perhaps, the shape of purchasing the gold at 5s. per ounce above the standard rate. Then there was a half-promise about cheaper explosives, which should be an easy matter now that the shooting has stopped. However, these are on the small side as compared with the all-important one of greater native labour supplies. These are within practical politics, as the close of the German East campaign as well as the Portuguese territories also having become more or less normal again, will very much assist the native incoming. But this is not all, as longing eyes are being cast on the supplies from Central Africa, which are now possible considering the wonderful progress inoculation has made against the pneumonia scourge.

OILS, COLOURS, MOTOR PETROL AND PARAFFIN.

White lead has advanced in England £4 per ton according to the latest cable advices, but that is only an indicator, as the British Government has not raised its embargo against its export. White lead is from 95s. to 100s. per 100 lbs. in Johannesburg and 1s. 3d. per lb. from the distributing houses. Turps are 85s. 2-4's with a steadier tendency after the big drop, but the cargoes causing that have been absorbed and importers are awaiting the next lots from America, which should now be very near Capetown. Paints are much the same with an easier tendency, although the demand for those and wallpapers is excellent, preparatory to the holidays. Business is again normal as compared with the period before the 'flu epidemic. Travellers are not

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so much in evidence with loose parcels of oils, colours and other things in that trade. An idea prevails that most of the speculative goods have been got into stronger hands as undoubtedly values are steadier. However, there is no such thing as activity, as purchasers for stock are not in the mood to buy because a decided feeling is in evidence that the British Government will release white lead, linseed oil, etc., from its embargo list of exports as quickly as possible for the sake of future business. So far back as October 16th a Liverpool paste firm issued a circular letter stating that the British Government had given them permission to do an export trade and presumably other firms had similar permission granted.

TIMBER AND BUILDERS' MATERIAL.

Business is very slack, both in town and on the Reef. People are standing aside presumably to see the happenings until the New Year opens. There is a little timber offering from the Baltic, but even there an uncertainty exists about freight, which is offering slowly for the long journeys, as preference is given to the London trade. The second-hand timber and building material trade is steady considering the holidays. The best second-hand deals are 1s. 3d.; flooring, 6d. to 7d.; ceiling, 4d.; Oregon pine, 6s. to 6s. 6d.; and roofing iron of the best, 1s. 2d. to 1s. 4d. the running foot. On the whole stocks are fair. The demand for bricks is slow, but a few orders are being booked for January and hopes are entertained at that time better business will ensue. The builders' ironmongery is rather better than the dullness described last week. The additional orders are for completing houses and business premises.

IRON, STEEL AND OTHER METALS.

The demand for the smaller kinds of bar iron and mild steel is quite fair, as the iron moulders are at full work again, therefore the foundries have bought rather freely. There is very little $\frac{3}{4}$ round iron in town, except of local make. Copper and brass rods and sheets have fallen very slightly. The question of price is being governed as to what is on the way from America. The trading in brass, copper and iron is chiefly from outside sources, such as railways and municipalities, as very little is being done with the mines. Second-hand steel plates of the very best are steadier in price at about £25 per ton, but others go at any price according to condition.

ELECTRICAL MATERIALS.

Recently an element has been introduced into the retail trade amongst several firms, of cutting prices, hence lamps are being offered freely, per advertisements of various kinds, including extra window dressing. There is a reason for this, that may be personal or otherwise. However, it appears there are heavy stocks of lamps in town, as they have been reduced 3s. a dozen wholesale, and from 3s. to 3s. 6d. each retail. Business is very slack in a general way, and nothing much is expected until the turn of the year.

REVISED PRICE LIST.

BUILDING MATERIALS.—Timber: Deals, Baltic, 9 x 3, 1s. 10d. to 2s.; flooring, $4\frac{1}{2}$ x $\frac{7}{8}$ and 6 x $\frac{7}{8}$, 10d. to 11d. per sq. ft.; ceilings, 6 x $\frac{1}{2}$, 6d. to 7d. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. per cub. ft.; clear pine, $\frac{1}{2}$ in. x 12 in., 1s. 4d. per foot; 1 in. x 12 in., 1s. 8d.; teak, 25s. to 27s. 6d. per cubic foot; shelving,

1s. 3d.; Jarrab, 14s. 6d. cu. ft.; poplar, lin. x 12 in., 1s. 9d.; scantling, 1s. 10d. to 2s. per ft.; beaver boards, 9d. to 9d.; galvanised iron, 24-gauge, 8ft. to 10ft. 1s. 11d. to 2s.; 11ft., 2s. 1d.; 12ft., 2s. 2d.; 26-gauge, 6ft. to 8ft., 1s. 9d.; 9ft. & 10ft., 1s. 10d.; flat galvanised, 24 & 26-gauge, 95s. 100lb.; floor brads, 95s.; ceiling, 75s.; wire nails, 75s. to 150s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12 in. to 18 in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 85s. 2/4 1-5 galls.; 10-1's; 5-6 imp. tins, 100s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, $\frac{1}{4}$ in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 2loz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £33 to £33½ per ton; tallow (local), 8d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; perinanganate (Japanese), 14/6 lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 1s. 3d. to 1s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-melted zinc, 6d. lb.; plumbago crucibles, 6d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 28s. to 33s. wholesale, and 3s. to 3/6 each retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire. 65s.; ditto, 3/22, 40s. to 42s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 46s. to 50s. per 100 ft.; keyholders, 4s. 6d. to



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5s. each; round blocks, 3 $\frac{1}{2}$ in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON & STEEL.—Imported, $\frac{1}{2}$ in. & 3-16in. round iron & steel, 90/- to 96/-; $\frac{3}{4}$ in. do., 85/-; $\frac{1}{2}$ in. steel, round, 80s.; $\frac{1}{2}$ in. round iron, 77/6; do. steel, 70s.; $\frac{3}{4}$ in. round iron, 70s.; do. steel, practically none in town; $\frac{1}{2}$ in. round iron, 62s. 6d. to 65s.; $\frac{1}{2}$ in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron, 45s 100lb. Vereeniging mild steel also 50s. per 100lb. Steel-plates, 75s. to 80s.; many sizes unobtainable. Hexagon and cuphead bolts, $\frac{1}{2}$ in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; $\frac{3}{4}$ in. diameter up to 3in. long, 2s. 6d. lb.; $\frac{1}{2}$ in. dia., 1s. 6d.; 3 $\frac{1}{2}$ in. and up long, 1s. 6d. lb.; $\frac{1}{2}$ in. dia. up to 2 $\frac{1}{2}$ in. long, 77s. 6d. 100lb; $\frac{1}{2}$ in. dia. and 2 $\frac{1}{2}$ in. up long, 75s. per 100lb.; $\frac{3}{4}$ in. dia. up to 2 $\frac{1}{2}$ in. long, 1s. 6d. per lb.; $\frac{1}{2}$ in. diameter 2 $\frac{1}{2}$ in. and up long, 60s. per 100lb.; $\frac{3}{4}$ in. diameter, 2 $\frac{1}{2}$ in. and up long, 1s. per lb.; $\frac{1}{2}$ in. and 1in. diameter, same price as $\frac{3}{4}$ in. diameter; nuts, $\frac{3}{4}$ in., 1s. 3d. per lb.; $\frac{1}{2}$ in., 85s.; $\frac{3}{4}$ in. 90s.; 1 $\frac{1}{2}$ in. and 1 $\frac{1}{2}$ in., 85s.; 1 $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in., 87s. 6d.; 2in. np, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; $\frac{1}{2}$ in., 5-16in., 1s. 6d. lb.; 7-16in., $\frac{3}{4}$ in., 1s. 6d. lb.; $\frac{1}{2}$ in., 75s. to 80s.; $\frac{3}{4}$ in., 72s. 6d.; $\frac{1}{2}$ in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5 $\frac{1}{2}$ d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction kinoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

Rhodesia, Ltd.

The report of Rhodesia, Ltd., for 1917 states that the authorised capital at 31st December last stood at £600,000, divided into 2,400,000 shares of 5s. each, and the issued capital at £304,542, divided into 1,218,168 shares of 5s. each. At an extraordinary general meeting held on 19th December last, and subsequently confirmed, resolutions

were passed by which each of the issued shares of 5s. became shares of 2s. each, and the unissued shares were also dealt with, so that the nominal capital now stands at £417,275, divided into 4,172,748 shares of 2s. each, of which 1,218,168 have been issued, leaving 2,954,580 of 2s. each in reserve. In a circular dated 13th June last it was reported that an agreement had been entered into with the Anglo-American Rhodesian Exploration Company, under which 1,218,168 of these reserve shares were to be issued to holders of the then issued shares under guarantee of that company, the holders of such shares having the right to take up 609,084 of the guaranteed issue in proportion to their holding at par—that is to say, 2s. per share, less 15 per cent. commission thereon—and they may also apply for any of the further 609,084 shares at par. Profit for the year amounted to £3,091. The amount of £10,900 (special creditor) has been reduced since the date of the accounts by £5,600, leaving one instalment to liquidate—namely, £5,300—on 11th June, 1919. During the year 60 claims were abandoned and 20 acquired. The total number of mining claims now held is 708. No development work has been carried out at Sabiwa mine during the year. The total ore reserves at date of ceasing work were reported to be approximately 195,000 tons, of an average value of slightly over 11 dwts. per ton. Development is regarded as sufficiently advanced to warrant complete equipment as a producing property so soon as times permit. The returns from Annasona mine show that 3,648 tons were treated, yielding bullion—including proceeds from cyanide plant—to the value of £22,487. Since the close of the accounts cable returns state that a further 2,469 tons have been treated, yielding bullion to the gross value of £11,634. Developments continue to be most encouraging.

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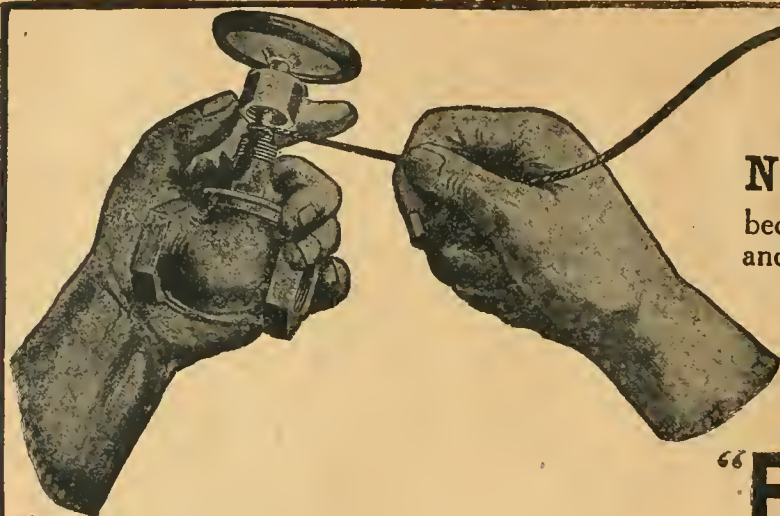


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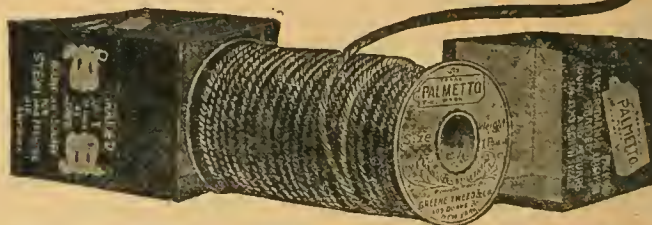
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Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—IX.

The following is the continuation of Mr. A. E. du Pasquier's article on "Railway Electrification":—

The road is primarily a coal-carrying road, over 85 per cent. of its revenue being derived from freight. The largest individual coal area on the Norfolk and Western lines is the Pocohontas field, extending from Graham to Welsh, 27 miles west of Graham. The field comprises no less than 86 collieries, the output of which is solely dealt with by this line, and accounts for 62 per cent. of the total coal tonnage of the road. Of this quantity about 250 car loads a day go west, and the remainder goes east over this electrified section. To give some idea of the density of these coal mines, in a section of 10 miles between Vivian and Switchback, there are no less than 54 main line switches controlling the delivery and outlet tracks to the mines. In addition, there are the numerous crossovers necessary for the delivery of cars and the assembling and picking up of loads on either side of the main line. Under steam conditions, employing Mallet engines of the most powerful description—the latest were of the 2-6-6-2 class, weighing 200 tons, fitted with super heater equipment and mechanical stokers, with a tank carrying 15 tons of coal and 9,000 gallons of water and capable of exerting a tractive effort of approximately 85,000 lbs.—three of these locomotives were required to handle a 3,250 ton train on the 2 per cent. grade at a speed of 7 miles per hour. At the entrance to the tunnel the pusher had to be dropped off owing to ventilation conditions, and the remaining two Mallets made a very slow job of hauling the 3,250 ton train through the tunnel. Actually it used to take twenty minutes to clear the tunnel, whereas the electric locomotives consistently pull a 3,250 ton train through in approximately three minutes. There were also many additional delays with steam traffic, due to train stalling, break-in-two incidents at starting, and so on. In 1912, therefore, it was decided to electrify this section, and on a scale to handle 65,000 gross tons of east-bound traffic in 24 hours. Twelve electric locomotives were deemed sufficient for this duty. The object of the electrification was to obtain an increase in the capacity of the

existing track by increased speed, by handling heavier trains, and by eliminating delays for coal and water. It was anticipated that there would also be a general reduction in operating expenses, maintenance, fuel, train crews, and so on, and fewer train delays. Some striking figures as to the comparative performance of these Mallet engines and the electric locomotives are given in the paper by Mr. C. H. Quinn, to which reference has already been made. The maximum east-bound tonnage handled by steam locomotives for any 24 hours in 1914 was 51,226 gross tons. The corresponding figure for 1916, with electric locomotives, was 59,543, or an increase of 16 per cent. The maximum number of loaded east-bound cars in any one day, by steam, was 675, and required 43 locomotives, the corresponding figures for the electric locomotives being 757 cars, with 9 locomotives. When one talks about cars, one must remember that this road is equipped with many 100 ton cars, called "battleships." The total number of loaded east-bound cars handled by steam in 1914 was 132,618, which figure was increased in 1916 to 165,689 with electric locomotives. A still more remarkable figure is the time figure. To handle the 1914 traffic just stated took 93,625 steam engine hours, whereas the 25 per cent. greater traffic in 1916 was dealt with in 44,112 engine hours—a 25 per cent. increase in traffic handled in less than half the time. A few more figures and I have finished. The total ton miles, east-bound, in 1914 amounted to 457,163,921, the figure for 1916 being 592,597,018, or 30 per cent. increase. On the basis that 25 Mallet engines could handle the 1914 traffic, it would have required 33 to deal with the 1916, and further, Mr. Quinn points out that, if one considers the maximum day condition, 42 Mallets would have been required, whereas the 1916 traffic was handled with an average of 7 electric locomotives in service at one time. The conclusion he draws is that, without any increase in track facility, the capacity of the line has been at least doubled. Details of these locomotives have already been given and need not be repeated, but the following table gives fuller particulars as to power and tractive effort developed with different loads on different grades:—

NORFOLK AND WESTERN RAILWAY.—INFORMATION ON FREIGHT MOVEMENT.

	VIVIAN TO ELKHORN TUNNEL		ELKHORN TUNNEL TO GRAHAM.		GRAHAM TO BLUEFIELD.	
	East bound.	West bound.	East bound.	West bound.	East bound.	West bound.
Trailing load tons	3,250	2,000	3,500	2,000	3,250	2,000
Locomotives per train	2	1	1	1	1	1
Speed on grades	14	14	28	14	14	14
Maximum grade %	+2	—2	+0.4	+1.1	+1.22	+1.14
H.P. on maximum grade	6,350	—	3,450	2,560	3,980	2,640

TRACTION EFFORTS FOR DIFFERENT GRADES AND LOADS.

	Train on 1.5 and 2% grades.	Train on 1% grades.	Train on 0.4% grades.
Weight of train, tons	3,250	3,250	3,250
Locomotives per train	2	1	1
Approximate speed, miles per hour	14	14	28
Drawbar pull per locomotive lbs.			
Uniform acceleration	91,800	114,000	79,400
On 2% grade	75,400	—	—
On 1% grade	—	85,800	—
On 0.4% grade	—	—	4,600
Maximum guaranteed accelerating tractive effort per locomotive lbs.	133,000	133,000	90,000

A brief description of a round trip on these locomotives would be something as follows:—Starting from the eastern boundary, the locomotive would leave the Bluefield inspection track, and in the west Bluefield yards would pick up a train of from 85 to 95 empties, and proceeding westward set them off at the various mines in the coalfield west of the tunnel. Proceeding on to Eckman, where the main yards are, the locomotive, without turning, picks up what is known as a tonnage train of 3,250 tons, consisting of from 28 to 45 cars, depending on their capacity, and starts out east again. A pusher is utilised from Eckman to Ruth, at the eastern portal of Elkhorn tunnel and at the summit of the 2 per cent. grade. The single locomotive then takes the train to Flat Top yards, where additional tonnage up to 4,750 is accepted. The run over Flat Top to Bluefield is made with the help of a pusher on the final $1\frac{1}{4}$ per cent. grade section between Graham and Bluefield. The round trip from Bluefield to Eckman and back is made in the average time of 7 hours, and two such trips constitute an average day's work for one train crew. Formerly, with steam operation, a day's work for one train crew consisted of a single round trip between Bluefield and the coalfield, which usually took 12 hours. Some ammeter readings taken on one of these trips may be of interest. Four ammeters are provided in the cab, each registering the current taken by each of the four trucks. Normally, the current taken by the different trucks is equal, therefore the total current taken by the locomotive is four times the reading of one ammeter. The train westward bound consisted of one locomotive, with a trailing load of 92 empties. Going up the 1.4 per cent. grade, west of Bluestone, at 14 miles per hour, the ammeter registered 500 amperes, and when coasting down the 2 per cent. grade, through and west of the Elkhorn tunnel, an average regenerative current of 300 amperes was registered. On coming east, with 23.75 ton cars, half a normal tonnage train, with one locomotive, the ammeter showed 550 amperes on the 2 per cent. up grade, and a regenerative current of 400 amperes on the 2.36 per cent. down grade; one locomotive taking a full tonnage train of 3,250 tons down the 2.36 per cent. grade, at about 15 miles an hour, registers a regenerative current per truck of 550 amperes. It is said to be a most impressive sight to see one of these heavy coal trains hauled up one side of the mountain and lowered down the other, at a constant speed, without the use of air brakes and with no indication of the changing grade other than the gradual fall and rise of the ammeter needles. The regenerative ability of the three-phase motor is one of the main factors which make their use for this severe service particularly successful. Another

characteristic which has proved most valuable is the inherent ruggedness, due to the absence of a commutator. Starting long and heavy trains on a grade like this, with a steam locomotive, it is essential that the pusher does not shut off steam when the leading engine stops the train with the air brakes; it simply holds against the train with open throttle, and in so doing permits the leading engine to release the air and pick up its share of the slack when ready to start. When the front half of the train is under weigh, the pusher will start its half, and so the entire train is got under weigh with a minimum of jarring and bumping. The three-phase motors on these electric locomotives are peculiarly adapted to stand up under such severe operating conditions; in fact, their ability to stand still under full load, for a maximum of five minutes, while holding a train about to be started on a heavy grade, contributes in a large measure to their success in this installation. Before leaving this description of the general operating conditions of the line, I would like once more to quote Mr. Quinn on the question of the constant speed characteristic of these equipments:—"Some criticism of the constant speed feature of operation has been made by steam railroad men, who are not conversant with the results thereof. The train despatchers speak most enthusiastically of this feature, which permits them to count on the arrival of a train at a given point within a fraction of a minute, consequently their despatching is rendered very much easier. As a result, any freight train is sent out on the line ahead of any passenger train, whose schedule speed is not more than 15 miles an hour, and the passenger train is not held up. I came in on a very heavy east-bound train that actually was sent out on the line 20 minutes ahead of the passenger train, and we pulled into the Bluefield terminus in plenty of time to clear the passenger train. Such operating would be unheard of on the ordinary steam line."

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DIVIDEND No. 23.

NOTICE IS HEREBY GIVEN that Dividend No. 23 of Ten per Cent. (2s. per Share) has been declared by the Board, payable to all Shareholders registered in the Books of the Company at the close of business on the 31st day of December, 1918.

The Share Transfer Books will be closed from the 1st day of January to the 7th day of January, 1919, both days inclusive.

The Dividend Warrants will be posted to Shareholders from the Head Transfer Office on or about the 18th day of January, 1919.

By Order of the Board,
TRANSVAAL CONSOLIDATED LAND & EXPLORATION Co., LTD.,
Secretaries.

W. E. S. LEWIS, Secretary.

Head Office:
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Johannesburg, 18th December, 1918.

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Declaration of Dividend No. 16.

NOTICE IS HEREBY GIVEN that a Dividend (No. 16) of 5 per cent., equal to 1s. per share (making, with the Interim Dividend of 5 per cent. declared in June last, a total Dividend of 10 per cent. for the year ending 31st December, 1918), has been declared, payable to Shareholders registered in the Books of the Company at the close of business on Tuesday, the 31st day of December, 1918.

By Order of the Board,

T. L. DAY, Secretary.

Lace Building, 74, Fox Street,
Johannesburg, 17th December, 1918.

Railway Equipment and Standardisation.

COMMITTEE REPORTS IN FAVOUR.

The report of the Advisory Council which the Ministry of Reconstruction appointed to consider the desirability of standardisation of railway equipment is now available. Its conclusions in brief are that, in so far as is practicable, the national interest would be best served by uniformity of railway plant, and immediate steps to carry standardisation into effect are recommended. It is suggested that the standardisation of wheels, axles, wheel-centres, tyres, running gear, draw gear, buffing gear, bogies, brakes and underframes be dealt with immediately by the Engineering Standards Committee on which all interested, including private builders and makers of materials, should be represented, and that when such essential parts have been standardised the adoption of the standards should be gradually enforced. In view of the difficulties of standardising complete locomotives and other rolling stock under existing circumstances and of the excessive amount of dead weight now carried on British railways, it is proposed that a Committee be formed to investigate the existing conditions of structural gauges and clearances of the British railways and the loading and unloading arrangements at works and ports in order to ascertain how far uniformity could be introduced and tares reduced, and at what cost. The Committee further thinks that the costs of construction of locomotives and rolling stock by the railway workshops and by private firms respectively should be investigated and ascertained by competent independent accountants appointed by the Government. In view of the great demand for rolling stock that there will be at the close of the war in Britain and elsewhere, it is felt that, in order to expedite delivery and to secure production at the lowest possible cost, standardisation is very necessary for the export trade. The Committee

therefore recommends that the consulting engineers and representatives of railways financed by British capital in foreign parts and in the Dominions be brought together to confer with the locomotive and wagon manufacturers in this country to determine what standardisation can be effected, and that, with a view to the possibility of effecting partial international standardisation, the separate Committees should take cognisance of each other's investigations.

Treatment of Conveyors.

Mechanical conveying apparatus is a necessary adjunct to milling operations. The design and manufacture of it has developed from an insignificant beginning to a highly specialised industry, and, in common with other specialities, is none too well understood by the general practitioner. Mr. Robert S. Lewis, Professor of Mining in the University of Utah, contributes an interesting and instructive article to the 14th September issue of the *San Francisco Mining and Scientific Press* dealing with the design and application of the conventional types of conveyor. Mr. Lewis offers a means of determining the efficiency of the so-called "friction" by a simple test, which is rational, effective, and should enable the prospective purchaser easily to appraise the serviceability of the belt that he is going to buy. The question of the proper position for the drive end of the conveyor is determined by whether the conveyor is horizontal or is expected to elevate and also to convey. If the conveyor is horizontal it is of no special consequence whether the drive be at the head or the tail end. If the conveyor is set at an angle and is expected to perform the function of an elevator as well, the drive should invariably be at the discharge end. A belt must be pulled up; it cannot effectually be pushed up. It is interesting to note, in Mr. Lewis's article, the copious reference made to the formulas developed

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by manufacturers; this is only another instance where commercialism inspires scientific research in order to render possible better service for the user. All the engineers in the world are not in consulting practice, and much of the best work that has been done in engineering research has been accomplished in the experimental laboratories and testing plants of the manufacturer. Too little attention is given by designers to the determination of proper diameter of pulleys. As Mr. Lewis points out, the thickness, or number of plies of the belt, is the governing factor; too small a pulley in proportion to the thickness of the belt lessens the life of the belt greatly.

There is another factor influencing the length of service obtained from the belt, and that is age. After a time the rubber loses its elasticity—it hardens and cracks. This occurs whether the belt be in use or not; in fact, idle belts seem to succumb to the ravages of time more rapidly than those in constant use, in which respect they are similar to the human machine. Why is it that lagged driving-pulleys are not used more frequently? Wood or rubber-strip lagging may be employed to good purpose; it greatly diminishes the loss of power due to slippage. This is especially true wherever the troughing-belt is used to elevate as well as to convey, and the degree of elevation approaches closely to the critical angle beyond which the material will not cling to the surface of the belt. Chutes feeding belt-conveyors should be set at such an angle as to minimise the abrasive effect of the material upon the belt, and, if the material fed is ore in comparatively large particles, some sort of hinged baffle should be placed in the chute to break the force of impact on the belt. Belts are costly, especially at the present time, and every possible care should be exercised to obtain the utmost service from them. "Dusting," where fine dry material is conveyed, is another cause of destruction, especially to bearings. The compression grease-cups should be inspected daily and kept filled. Keep the dust and dirt outside; there is no objection to the spectacle of grease exuding from the space between the pulley-hubs and the bearings; in fact, it is an excellent surface indication of good lubrication inside.

The report of Wanderer (Selukwe) Gold Mines, Ltd., for the year ended 30th April last states that the quantity of ore treated was 148,395 tons, as against 164,700 tons. Working costs increased by about 3½d. per ton, of which 2d. is estimated to be caused by the additional cost of stores. The costs are about 9d. per ton below those of the previous year, when 2,000 tons less were treated. The bullion sales produced £60,542, as against £71,052. The average grade of ore treated was 2·47 dwts., the gold left in the residues averaging ·58 dwt. In the previous year the figures were: Grade 2·60 dwts., and residues ·50 dwt. Ore reserves at 30th April last were estimated to be 48,000 tons, and the development work done during the year amounted to 7,035 feet, a decrease of 2,125 feet. The cost of development has been charged to revenue account as in previous years. Owing to an abnormal rainfall losses were made on the working of the mine for the months of December, 1917, and February and March, 1918, with only small profits for January and April, but the severe storms had far-reaching effects on the properties generally. The Hillside property, consisting of three blocks of claims situated immediately to the south of the company's property, was acquired by purchase in January last. Further three blocks of claims, adjoining those purchased, were pegged, and it was hoped that these acquisitions would go towards making good the deficiencies in the older sections of the mine, but the results have been disappointing. The latest information by mail from Mr. Noel Griffin foreshadows the necessity for shutting down in December next, as soon as the rainy season has thoroughly set in, as he is of opinion that with so many of the sections exhausted it will not be possible to continue to work the remainder at a profit. The net profit amounted to £17,251; £4,777 was brought forward (after payment of £30,000 in respect of the dividend of 1s. per share on 15th August, 1917), making £22,028, which in view of the financial position of the company the directors propose to carry forward.

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Vogelstruis Consolidated Deep, Ltd.

(IN LIQUIDATION.)

Invitation for Tenders.

SIGNED AND SEALED TENDERS are hereby invited for the purchase of the property of the above Company, consisting of 294 Prospecting Claims, 62 Diggers' Claims and 3 Water Rights, all situate on the farm Vogelstruisfontein No. 62, Mining District of Krugersdorp.

The terms of sale are cash, which will have to be paid by the successful tenderer before transfer is passed. All costs of transfer to be borne by the purchaser. All tenders must be received not later than 4 p.m. on Monday, 20th January, 1919, and must hold good up to 4 p.m. on Monday, 10th February, 1919. The highest or any tender will not necessarily be accepted.

Assay Plans and other particulars can be seen and obtained at the office of the Liquidators.

H. G. L. PANCHAUD,
Secretary to the Liquidators.

78 Cullinan Building,
Johannesburg,
14th December, 1918.

Zaaiplaats Tin Mining Company, Ltd.

(Incorporated in the Transvaal.)

Notice of Declaration of Dividend No. 18.

NOTICE IS HEREBY GIVEN that a Dividend of 30 per cent. (i.e., 1s. 6d. per share), has been declared payable to Shareholders registered in the books of the Company at the close of business on FRIDAY, the 31st DAY of JANUARY, 1919.

Dividend Warrants will be posted to South African Shareholders from the Head Office, Pretoria, as soon as possible after the receipt of the final Transfer Returns from London, and to European Shareholders from the London Office, Pinners Hall, Austin Friars, E.C.

The Share Transfer Register will be closed from the 1st to the 6th day of February, 1919, both days inclusive.

No deduction will be made from the amounts due to South African shareholders in respect of any dividend tax payable by the company to the Union Government.

By Order of the Board,

H. P. WEBBER,
Secretary.
Tudor Chambers,
Church Square, Pretoria,
18th December, 1918.

Meyer and Charlton Gold Mining Co., LIMITED,

(Incorporated in the Transvaal.)

DIVIDEND No. 58.

NOTICE IS HEREBY GIVEN that a Dividend of Fifty per Cent. (50 per cent.), equal to Ten Shillings (10s.) per share, and a Bonus of Ten per Cent. (10 per cent.), equal to Two Shillings (2s.) per share, free of Union Income Tax (making, together with the Dividend of 50 per cent. declared in June last, a total Dividend of One Hundred per Cent. (100 per cent.) and a Bonus of Ten per cent. (10 per cent.) for the financial year ending 31st December, 1918) have been declared by the Directors for the half-year ending 31st December, 1918, payable to all Shareholders registered at that date, and to holders of Coupon No. 58, attached to Share Warrants to Bearer.

Warrants in payment of this Dividend and Bonus will be issued to European Shareholders from the London Office and to South African Shareholders from the Head Office, Johannesburg, as soon as possible after the receipt at Head Office of the London Transfer Lists to 31st December, 1918.

Holders of Share Warrants to Bearer will receive payment (12s. per share) in exchange for Coupon No. 58, at any of the undermentioned Offices of the Company:—

Head Office: General Mining Buildings, Johannesburg.

London Office: 63/64 Winchester House, E.C.2.

Paris: At the Credit Lyonnais, 19 Boulevard des Italiens.

Coupons must be left for FOUR CLEAR DAYS for examination. The Transfer Registers will be closed from the 1st to the 7th January, 1919, both days inclusive.

By Order,

J. V. BLINKHORN,
General Mining Buildings,
Marshall Square (P.O. Box 1173),
Johannesburg, 19th December, 1918. Secretary.

VAN RYN GOLD MINES ESTATE, LTD.

(Incorporated in England.)

DIVIDEND No. 30.

NOTICE IS HEREBY GIVEN that the Board of Directors have declared an Interim Dividend of Five per Cent. (1s.) per Share, less English Income Tax, but free of Union Income Tax, for the half-year ending 31st December, 1918.

The Dividend now declared will be payable to all Shareholders registered at the 31st December, 1918. Dividend Warrants will be posted from London to Shareholders on the European Register on the 24th January, 1919, and to Shareholders on the South African Register from Johannesburg early in February.

Holders of Share Warrants to Bearer must present Coupon No. 30:—

In London: At the Registered Office of the Company, 63/64 Winchester House, Old Broad Street, E.C.2.

In Paris: At the Credit Lyonnais, 19 Boulevard des Italiens. The Coupons must be left for examination for FOUR CLEAR DAYS.

The Books of the Company will be closed from the 1st to the 15th January, 1919, both days inclusive.

By Order,

J. V. BLINKHORN,
General Mining Buildings,
Marshall Square (P.O. Box 1173),
Johannesburg, 19th December, 1918. Local Secretary.

Company Meetings.

DE BEERS CONSOLIDATED MINES,

Annual Meeting of Shareholders.

Speech by Sir David Harris.

The thirtieth ordinary general meeting of the shareholders of De Beers Consolidated Mines, Ltd., was held in the board room at the company's offices in Stockdale Street, Kimberley, on December 13. There were present: Colonel Sir David Harris, K.C.M.G., V.D., M.L.A. (who presided), Mr. G. W. Compton, Mr. W. Pickering (and qq. A. Gioag), M. P. Ross Frames, Mr. R. Philipson-Stow, Mr. F. Hirschhorn, Mr. A. Brink, Dr. A. G. W. Compton, Mr. W. M. Miller, Mr. E. Oppenheimer, Mr. B. Horkheimer, Mr. E. E. Newberry, Mr. T. Rowe English, Mr. G. R. Benford, Mr. A. Siew, Mr. L. McBean, Mr. E. W. Weatherby, Mr. Colin W. Lawrence, Mr. J. J. T. King (and qq. Mrs. R. McFarland, Mrs. J. McCullagh, D. van Ulsen, and estate late C. A. E. H. Meyer), Mr. H. Rose Innes, Mr. A. Westcott, Mr. Paul Senior, Mr. Walker Marshall, Mr. A. S. Gibson, Mr. C. E. Hertog (the company's solicitor), and Mr. E. F. Haynham (secretary).

Col. Sir David Harris held proxies representing 190,788 shares.

Mr. F. Hirschhorn held proxies representing 60,813 shares.

Mr. A. Brink held proxies, representing 7,726 shares.

Mr. G. W. Compton held proxies representing 3,700 shares.

Mr. R. Philipson-Stow held proxies representing 6,288 shares.

The Chairman called upon the Secretary to read the notice convening the meeting, after which the secretary also read the minutes of the last annual general meeting of shareholders held on 30th November, 1917, and an extraordinary general meeting held on the same date immediately after the annual meeting. The minutes were duly confirmed.

DIRECTORS' REPORT AND STATEMENT OF ACCOUNTS.

The Chairman: As the Directors' Report and the accounts have been in the hands of the shareholders several days, I take it that you will follow the usual custom, and that some shareholder will be good enough to propose that they be taken as read, which will save considerable time.

Mr. H. Rose-Innes moved, and Mr. J. T. King seconded, that the Directors' report and the financial statement be taken as read, and, there being no objection, the motion was agreed to.

The directors' report, together with the balance sheet and profit and loss account, have been published in previous issues, and the report of the General Manager appears elsewhere.

SIR DAVID HARRIS'S SPEECH.

Colonel Sir David Harris, K.C.M.G., V.D., M.L.A., then rose to move the adoption of the directors' report and financial statement, and in so doing he said: At the last annual meeting the chairman referred in sympathetic and touching terms to the deaths of four directors of this company, and the loss thus sustained by the removal of gentlemen who had been long and honourably associated with us in the conduct of its affairs. To-day it is my sad duty to mention yet another great loss in the death of Mr. Francis Oats, who was a director of this company for 28 years, and occupied the responsible position of chairman since

1908. Mr. Oats was a self-made man, who overcame the disadvantages he laboured under in early life, and by dint of hard study, indomitable persistency, and determination, laid the foundation of the distinguished and remarkable career which came to an honourable close in his 70th year. His devotion to the interests of this company was unbounded, and his solicitude for the welfare of its employees uppermost in his thoughts. His whole soul was wrapped up in De Beers Company, and his activities on its behalf knew no limitation, though even then he found time to take up an active interest in the affairs of South Africa generally, and to render valuable service in many ways. On behalf of the board, I express our deep regret at the loss of a capable and indefatigable colleague.

BALANCE SHEET.

In dealing with the finances of the company, I will firstly direct your attention to the debit side of the balance sheet. The items capital account and liability in respect of debentures remain the same as the previous year. Last year our General and Debenture Redemption Fund stood at £2,122,958, which has been increased to £2,208,992 by the addition of £86,034. From the big figure must be deducted £104,362, the cost of increasing our blue ground stocks from 8,291,722 loads to 9,077,267 loads, which leaves a balance of £2,104,630. Against this amount we have £1,500,000 invested in British War Loan, £250,000 in British National War Bonds, £100,000 in French National Loan, £25,000 in French Treasury Bills, and the balance in British Treasury Bills. I may mention that our total holding in loans raised for carrying on the war is £3,203,000. I feel confident that our shareholders will approve of the action of the board in subscribing such large sums to assist in maintaining the integrity of the Empire, and in all probability the security of our own property for which the enemy would have shown scant regard if he had been the victor in this great conflict. The value of the blue ground stocks has since last year increased by £104,362, and now stands at £1,295,433. A sum of £1,576,526 has been set aside as a reserve for the stabilisation of the diamond trade. This figure represents amounts which have been used from time to time for the purchase of shares in other diamond mining companies and kindred interests with the object of consolidating the diamond industry, and to prevent diamonds being put on the market in excess of the demand. The greater part of this amount appeared in our balance sheet last year under the heading "Amount transferred from Appropriation Account." The balance has been taken from this year's profits. On the assets side of the balance sheet, £2,626,526 is shown as "invested in other diamond companies and kindred interests." The £1,576,526 which I have already mentioned is included in this, leaving a balance of £1,050,000, which appears as a liability in the balance sheet. As this £1,050,000 is reduced, so the reserve will increase, and when the liability is wiped out the reserve on the liability side and the investment figure on the asset side will equal each other. Our reserves have reached a fairly substantial figure, but are not in excess of the amount that may be required in an emergency to meet our obligations and responsibilities. When war was declared between England and Germany on the 4th of August, 1914, there was a financial deadlock in London. I can speak of this with some authority, as I happened to

be in England at the time. Bank of England notes could not be exchanged for gold, credit was at a standstill, and it was quite out of the question for a mining company to borrow large sums of money. The state of affairs was so serious that we felt compelled to close our mines, but at the same time we rendered every assistance to our employees. The decision of the board to stop work was fully justified, because we did not sell a solitary diamond for eleven months after hostilities commenced. The recent influenza epidemic is a painful object-lesson of the great risks attending our operations, as the bulk of the natives working for the company insisted on leaving for their homes; consequently our mines have been shut down since the 4th of October, though in spite of this we have not dismissed any of our white employees. Realising the necessity for having an adequate reserve, we have succeeded in setting aside an amount which should be sufficient to keep our mines working during an emergency, as we are most anxious to keep our people employed, and not to cease work, as we were forced to do at the commencement of the war.

The policy of regulating the sale of diamonds to the demand has benefited the small concerns and also the alluvial diggers, who continually produce as much as possible, and reap the advantage of the control by securing greatly enhanced prices for their finds. The company's cash reserve at 30th June, 1918, amounted to £2,104,000—a very big sum, but not too large to enable the company to tide over any temporary lull in the demand, and to ensure the withholding of diamonds that the world for a time would not be prepared to purchase. To maintain prices it is imperative that we should have adequate resources, so that the mines may continue working without being compelled to force sales on an unwilling market, which would inevitably result in a fall in prices, and in shaking the confidence of the trade which it has taken many years to establish, and which relies on the big producers to protect its interests. The power to maintain prices by regulating the supply to the demand is no longer a theory, but an established fact, which years of actual experience have positively demonstrated. Last year £4,979,436 stood to the credit of Property Account. This has been reduced by £71,331 by deducting £70,117 from the previous year's figure of suspense liability, and £8,700 sale of sundry machinery, and adding £7,486 for farms purchased. In last year's balance-sheet, investments in stock and shares figured at £3,121,885, of which £2,385,278 (representing investments in other diamond companies) has been transferred to our investments under that heading. Through the drawing of debentures, etc., we realised £37,884, leaving a balance of £693,723 in this year's accounts. The figure of £2,626,526 16s. 6d., under the heading investments in other diamond mining companies and kindred interests, is made up of the aforementioned £2,385,278, and the outright purchases during the year, the latter amounting to £241,249, as per the appropriation account. This year timber, fuel and other mining stores appear in the statement of accounts at £510,830. Last year the amount was £412,839, showing an increase of £97,991. This difference represents the enhanced value of the stores at today's prices rather than an increase in quantity.

PROFIT AND LOSS ACCOUNT.

We have spent £67,000 more this year than during last year in productive min-

ing expenditure, and for this additional sum we treated approximately 430,000 more loads. The cost of production is fully set forth in the General Manager's report. On non-productive expenditure we spent last year £139,099, against £62,330 during the present year, a reduction of £56,769. This difference is due to the fact that whereas during last year hauling operations at Dutoitspan Mine were only carried on for two months, hauling operations at that mine continued throughout the year under review. There is a decrease of £10,000 in charges account. The amount paid in interest on capital of leased companies and debentures, and set aside in the sinking fund provision for repayment of debentures, is practically the same as last year. In regard to the item, "Expenditure consequent on the war," I may state for your information that the war bonus has been increased, and the amount paid to employees on active service has also increased.

Up to the end of June last the total expenditure owing to the war in the shape of half-pay to employees on active service, war bonus, and donations to various funds, amounted to £451,955. In our financial year ended the 30th June, 1917, the sales of diamonds amounted to £4,606,750 against £4,030,723 for the following twelve months, a decrease of £576,027. In consequence of this falling-off in sales, our stocks this year have been increased by £269,554, as against last year's increase of £23,621, which represents an additional credit in the diamond account in respect of stocks of £246,533. The figure shown in our diamond account this year is therefore £329,494 less than last year. The company's participation in South-West Africa diamonds yielded £27,371, making a total difference of £302,123, being the net difference between this and last year's figure in the diamond account.

The actual increase in interest and dividends on investments was £70,453, the figure this year being £308,699 against £238,246 last year. The actual fall in value of our reserves and special investments for the year ended June 30, 1917, was £21,064; this year it is £12,666; that is to say, we lost £8,398 less than last year by following our usual practice of taking in our securities at current market value. This account shows a yield of £296,033 as against £217,182 last year, an improvement of £78,851.

APPROPRIATION ACCOUNT.

Although the shortfall in the diamond account was £302,000 compared with the previous year, our balance carried to appropriation account is only £200,000 less than last year's figure, owing to the difference in other items of revenue and expenditure. The £2,771,000 carried forward in this year's account has been dealt with as follows: Income tax, £267,000; investments for stabiliment of the diamond trade, £441,000; dividends, £1,990,000; increased suspense profit account, £31,000; and undistributed profits carried forward, £42,000.

TAXATION.

During the year under review we will have to pay the Union Treasury in normal and dividend taxes £267,500, which, together with £201,500 for diamond export duty, makes a total of £469,000. Deduct from this figure £60,000 dividend tax due on preference shares, and it leaves a balance of £409,000 contributed by deferred shareholders, or equal to about 8s. per share. For the 12 months the company declared 25s. per share, and it will therefore be seen that the deferred shareholders contributed in taxation 33 per cent. on the dividends declared during the year.

Legislatures, like other bodies and individuals, when seeking to impose additional taxation, or to make increased demands upon the mining industry, invariably base their claims on the profits made

as disclosed in the annual published accounts, and strengthen their arguments by selecting the most prosperous year in which the maximum profit was made, ignoring entirely the lean years when no return was received by the shareholders. This, you will agree, is most unreasonable and unfair. They do not consider for one moment the great risks connected with mining, and the precarious position of an industry producing a commodity of pure luxury, subject to the world's conditions politically, commercially and financially. Instead of averaging the return to shareholders over a period of years, they select the very best year, and on this they establish their contentions, which are consequently one-sided, as the following facts will emphasise. Since 1907, covering a period of 11 years, owing to the American financial crisis, and latterly the terrible war now happily ended, this company paid dividends for seven years only, and for four years the ordinary shareholders received no return whatever on their holdings. I feel constrained, in fairness to our shareholders, to mention these matters, as it would appear that they are purposely avoided by many occupying responsible public positions.

DIAMONDS.

During the year under review the diamond market was firm, and prices have advanced. The total number of carats produced by the three largest concerns—De Beers, Premier and Jagersfontein companies—did not total in the aggregate the average annual quantity put on the market by these companies during the three years preceding the war, for the reason that the world was not prepared to purchase the quantity exported in normal times. I may say, it is a source of great satisfaction, if not surprise, that the market absorbed the large amount it did, considering the devastation of Belgium and Northern France, the condition of Russia and other States, and the demoralisation of the cutting and polishing industry in Antwerp, which was the seat of an enormous diamond trade, and which centre will, I feel confident, in the near future, resume its great industrial activities. America, as usual, has been our best customer, and we are not only grateful to this great Republic for putting the finishing touches to the ghastly war, but for her continued large purchases of gems, the production of which provides employment for many thousands of human beings, and gives an impetus to an industry of great importance to the Union of South Africa. The stability of the diamond market is attributable to one circumstance, and to one circumstance only—namely, the policy of regulating sales to the demand, and to this fact we owe the present gratifying condition and position of the industry and the confidence established throughout the whole trade.

EXPLOSIVES.

The Cape Explosives Works, as you are aware, are exclusively owned by De Beers, and they have continued in operation without intermission during the whole period of the war. Despite the great difficulty experienced in obtaining raw materials, the requirements of the gold and diamond mines of South Africa and Rhodesia, and of the mines in Australia, have been fully met which reflects great credit on the management of the Explosives Factory. The bulk of the raw materials used in the manufacture of our explosives consists of nitre, sulphur and glycerine. The price of the last-named commodity has risen from £60 to £120, sulphur from £6 to £15 per ton, and nitre from £11 to £22 per ton since the war began. But our present selling price of the manufactured explosives has only risen about 15½ per cent. owing to our having laid in large stocks of these essential in-

redients at low rates. This necessitated a large outlay of cash. But subsequent events have fully justified that step. It is a source of great satisfaction that we were able to supply our clients with explosives at such reasonable rates. Although the profits of the factory were not increased, consumers have received the full benefit of our large purchases of raw materials before the big rise in prices took place.

TRAMS.

When we purchased from Messrs. Gibson Brothers, the local tramways, on July 1st, 1914, we reduced the 6d. fares to 2d., and the 3d. fares to 1d.; and since that date we have extended the system to other parts of the town, greatly to the convenience of the inhabitants. I may tell you that the running of the trams has resulted in a loss to the company, which the figures I will lay before you will illustrate. Of course, we could make the tramways a paying concern by doubling the present fares, which would then be only two-thirds of those paid before we took over the system from the former owners, but we have refrained from doing so in the interest of the residents of Kimberley and Kenilworth, among whom are numbered a large proportion of our employees and their families. Up to the 30th June, 1918, the capital expenditure on the tramways amounted to £165,278, exclusive of the proportionate share of our big power station. The profit on working for the twelve months, including employees' free tickets of twopence per journey (which is credited to income) amounted to £6,463—although we only debited running expenses with power generated by our plant at bed-rock cost, without taking into account the trams' proportionate share of interest and depreciation. If we calculate 5 per cent. interest on the capital outlay, which amounts to £8,264 per annum, and 7½ per cent. for depreciation, equal to £12,396, and deduct from these two items the £6,463 gross profit, there was a net loss of £14,197 on the twelve months' running. At the request of the Kimberley Shop Assistants Association, we reluctantly granted concessions to the female employees in receipt of low salaries. In actual money these concessions amount in the aggregate to only a small sum per month; but it strikes us as being unreasonable that De Beers should be made to bear a charge that should in all fairness be borne by the firms employing these young ladies. They should take a leaf out of our book, and provide the necessary number of tram tickets for these employees. Our trams, as you know, also carry a large number of youngsters attending the schools, to whom, for the sum of three shillings, 80 tickets are issued, each to complete a single journey from any part of the town. With these it is possible to travel 800 miles for the small amount mentioned. The running of the trams by De Beers Company is a distinct advantage and a direct saving to the community, for if, in addition to the capital now invested, the Municipality had taken the system over and erected its own electric power station, I doubt if it could have more than paid its way at double the present very low fares, or if the town would have enjoyed such an extended system as it now possesses.

TAXATION TEST CASE.

At last year's meeting the Chairman, the late Mr. Francis Oats, referred to the difference of opinion between the Consolidated Company Bultfontein Mine, Ltd., and the Griqualand West Diamond Mining Company Dutoitspan Mine, Ltd., and this Company regarding the liability for normal and dividend taxes imposed by Act 41 of 1917. To settle the question it was decided to appeal to the Law

Courts in a friendly action, and last year you were informed that the Local Division of the Supreme Court of South Africa had given judgment in favour of De Beers Consolidated Mines, Ltd. Since then the case has been brought before the Appellate Court, which is the highest tribunal in the Union, and it has upheld the judgment given here by Sir John Lange, which means that the Consolidated Company and the Griqualand West Company are liable for both taxes. At the time the decision was given by the Appellate Court, a sum of £2,455 12s. 8d. was due by the Consolidated Company, and £2,685 11s. was due by the Griqualand West Company, in respect of normal and dividend taxes, and if De Beers had insisted upon it, these amounts could have been deducted from the next payments of interest to those companies. De Beers, however, agreed to make ex gratia payments of these amounts to the Consolidated Company and the Griqualand West Company.

WAR CASUALTIES.

The terrible war that raged in the greater part of Europe, Africa, and Asia for four and a quarter years has ended in a glorious victory for the Allies. Right and justice have triumphed over ambition, frightfulness, and arrogance. The British Empire's sacrifices in blood and treasure are appalling. Of our employees alone, up to the end of June last, 77 were killed or died, and 147 were wounded, prisoners of war, and missing, making a total of 224 casualties. Our accounts and the General Manager's report will show that we offered every possible encouragement to our workers to proceed on active service, and to their credit I can say that nearly all those physically fit, and of military age, including a fair proportion of Dutch Afrikaners, took up arms in defence of the Empire. This spirit of patriotism was not confined exclusively to employees, as all directors' sons, without exception, of military age and fit for service, went to the front, of whom five were killed, one died, and several were wounded. In common parlance, I can say that all ranks of the Company "did their bit." My colleagues on the board desire to join with me in expressing the deepest sympathy with the relatives of those gallant men who have made the great sacrifice.

INSURANCE.

The South African Marine, Fire and General Insurance Company, Limited, which was registered in August, 1917, and in which De Beers holds a 50 per cent. interest, has since its establishment insured diamonds in transit to the value of £7,962,315. I doubt if we could have secured insurance during this period for one-third of that amount through the medium of other existing companies, as underwriters were only prepared to accept very limited risks in one bottom owing to the menace from enemy submarines. It was not from choice, but through compulsion, that we had to co-operate with the Premier and Jagersfontein Companies and the Diamond Syndicate in the formation of this insurance company, otherwise mining operations must have been restricted, as purchasers of the output were not willing to undertake the enormous marine risks. The insurance company was unquestionably a very necessary adjunct of the diamond industry although technically a separate entity. Up to now the operations of this concern have been very satisfactory and profitable, but, as there were always big floating risks, which averaged £733,900 daily up to the end of June, 1918—and at one period the risks afloat reached £1,384,750—there were very anxious times. But all is well that ends well though we cannot be certain of results until peace is finally de-

clared. I may mention that when the Royal Mail steamer "Kenilworth Castle" was nearly wrecked in June last our insurance company stood to lose over half-a-million sterling, having insured diamonds to this amount, which were carried in that boat. We had a very narrow escape of losing more than the whole of the paid-up capital and accrued profits, and it would have been necessary to have called up a portion of the subscribed capital if the mails had been lost. As you may imagine, it was a great relief when we heard that the diamonds referred to were safely delivered in London.

INFLUENZA EPIDEMIC.

Gentlemen, you all know, only too sadly, how the epidemic designated Spanish influenza attacked Kimberley. During the month of October about two-thirds of the entire population—European, native, and coloured—became affected, and about 9 per cent. of the inhabitants were carried off by the dread malady. The native and coloured sections of the community were more susceptible to the disease than the white people, though the toll among the latter reached 550, a tragic testimony to the havoc wrought by the devastating disease.

Kimberley Hospital, which has accommodation for 320 patients, could not cope with the number of stricken people for whom admission was sought, and emergency hospitals were organised, including the Hotel Belgrave, the property of this company (with accommodation for 105 beds), the Beaconsfield Central Schools (with 50 beds), and the Teachers' Training College, which had 92 beds. All these annexes to the Central Hospital were quickly filled with patients, the majority of whom would no doubt have succumbed without the medical attention, skilled nursing, and nourishment they received at those institutions. During the first week of the epidemic we were dependent upon the services of the resident doctors, but, as several of these gentlemen were themselves attacked by the disease, the work of those who escaped, and were able to attend upon the sick, was enormously increased. This company spared no effort and expense in combating the appalling visitation. Our staff and various organisations were placed at the disposal of the town and districts, and there is reason to believe that the help thus afforded saved many lives. The services rendered by our General Manager, Mr. Alpheus Williams, ably assisted by many willing workers from the employees of the company, are beyond praise. Neither fatigue nor danger deterred them from carrying out their self-imposed duties, even though many had those near and dear to them living stricken in their homes at the same time.

The number of deaths in our compounds was appalling. 22-40 per cent. of our native labourers succumbed as a result of the epidemic, despite medical attention, nourishment, and every possible nursing and care. The ordinary compounds staff could not adequately deal with the number of cases, and many of our white employees volunteered their services in doing the utmost to combat the scourge and nurse the natives who fell sick. I regret to say that a large number of these brave men contracted the influenza, and many of them died, but others immediately came forward to take their places, in fact, there was no lack of workers willing to face the risk of disease, and even death in order that help and succour should be rendered to the mine natives.

Our mine compounds were considered excellent so far as their construction, sanitary provisions, and general organisation were concerned. A hospital with an adequate staff was provided at each, and the general health of the natives was most satisfactory; the death-rate for nine

months ended 30th September, 1918, being 6-184 per thousand, while during the epidemic, out of a total population of 11,445 in our compounds, 2,564 died. The terrible time experienced during last October has given food for thought on the part of the Directors, General Manager, and staff, and after due consideration we have decided to erect one large general hospital, maintaining only a dressing station at each compound. Some of the existing compounds will be improved, others demolished, and new ones erected. Water sewerage will be installed throughout, and no expense will be spared to make the compounds, if possible, more comfortable and healthy for the natives than those occupied previous to the epidemic.

So far as the town was concerned, a large number of men, women, and even girls of tender age volunteered their services for the nursing of the sick. Others undertook relief work and visiting sufferers in their homes. They knew the risk connected with such work, but the dangers did not deter these noble souls from joining in the efforts made to succour the sick and attend to the dying and the dead. Alas! a large number of these self-sacrificing volunteers paid for their devotion with their lives, still others came forward quickly and unhesitatingly to fill the gaps. The heroism displayed during the epidemic by these workers will live in the memory of Kimberley for all time. Kimberley may indeed feel proud that in periods of war and pestilence its daughters and sons have played a noble part, and the names of its heroes and heroines will be indelibly inscribed on the Roll of Honour.

COMPANY'S FUTURE OPERATIONS.

The reports and accounts submitted at this meeting only cover the twelve months ended June 30 last, but I cannot refrain from referring to events that have happened subsequently, which materially affect the operations of the company. Let me state at once that it is difficult to even estimate when we will be in a position to resume normal working. This, as you are aware, depends on our procuring sufficient native labour and replacing the 197 white employees who succumbed during the recent epidemic, and the additional losses of employees who fell while on active service.

On September 25 there were in our compounds 11,445 natives (including convicts), but consequent upon the large number of deaths and the great exodus of boys who left for their kraals, only 3,283 natives were left in the compounds on November 6th. We had stopped work entirely on October 4th, but on the 24th of that month we recommenced washing at Bultfontein, and at Wesselsfontein four days later. This is all the mining work being carried on to-day. For the last ten weeks the mines have not been working, and it is doubtful if we will be in a position to haul blue or wash Dutoitsman ground until February next, when we expect the natives will return after the end of the ploughing season. The large reserve of blue on the floors will enable us to continue washing operations for another three months, and to have sufficient pulverised blue available to maintain a continuous output of diamonds if hauling work is resumed in February, as expected. As I have already mentioned, in spite of productive work having been so greatly diminished, we have not discharged any of our employees.

EMPLOYEES' GENERAL EIGHT-HOURS SHIFT.

In every movement in this country for improving the conditions of the working classes and providing for their recreation and the welfare of their families, this company has been the pioneer. As far

back as 1892, following the advice of Mr. Gardner Williams, than whom the miners have never had a better friend, we inaugurated an eight-hour shift in our mines without decrease of pay. Five years ago we granted our employees 14 days' leave per annum on full pay, and we have now decided to extend the eight-hour shift to all surface hands. This system is, therefore, general throughout the company's mining works. The compensation awarded for the company has always been far in excess of the provisions of the Workmen's Compensation Act. In these and other matters of a similar character we have acted voluntarily, without pressure or intervention. Our men feel they can look with confidence to the Board and the General Manager for fair consideration and sympathetic treatment if they have any grievance or temporary difficulty. The relations existing between the company and its employees have been, and are, of the most cordial character. I think I can safely say there is a feeling of mutual confidence and reliance. This desirable state of affairs we are most anxious to perpetuate, and hope that nothing will be allowed to happen to disturb the existing good feeling which is so beneficial to all concerned.

REDUCED PAY MADE UP: £160,000 FOR EMPLOYEES.

The operations and finances of the company were so seriously affected during the American financial crisis in 1907-8 that we were compelled to decrease mining work for a very considerable period. Our diamond sales were reduced to such an extent that the ordinary shareholders received no dividends for nearly two years. From January 1st to September 30th, 1908, Saturday work ceased, so that for nine months we only did mining and washing on five days per week. At the same time the staff and a large number of other employees, owing to the special nature of their duties, put in full time, but, through the depression in the diamond industry, they voluntarily agreed to forego one-sixth of their salaries or wages. When the company had recovered its financial position three years later it made up to all concerned, towards the end of 1911, the difference between the salaries and wages they received and full pay, which amounted in the aggregate to £24,000. Although mining work during this period was very restricted, it was to a great extent productive, and we considered it only fair to ultimately pay those who had worked full time their full salaries.

In the first two years of the war this company had a very rough time indeed. We did little or no productive work, which will be apparent when I tell you that from September 1st, 1914, to the end of June, 1916, covering a period of 22 months, we hauled only 107,722 loads, contrasted with 14,956,869 for a like period from September 1, 1912, to June 30, 1914, the 22 months anterior to the war. During the former period we did everything possible to keep the old hands and married men employed. Many agreed to remain on half and some on three-quarter pay, a small percentage of whom worked full time in running the power station, trams, pumping, guarding, etc.; but we could have considerably decreased our expenditure by retaining on full pay only those actually required for the duties I have just mentioned and dispensing with the services of the large majority of men who were redundant. As, however, this policy would have resulted in hardships, and probably suffering to a large number of families, we decided to provide some sort of employment to prevent the distress which would have inevitably followed if we had adopted the other course.

During the 22 months that reduced pay was in operation owing to war conditions,

we did no remunerative mining work, as the figures I have just given you regarding hauling prove. We faced what we knew would be a serious loss to the company in the interest of our employees at the expense of the shareholders, who have never complained or expressed the slightest objection. Following the precedent established in 1911, when, after an interval of three years, we made up the difference between full salaries and the amount received by those who worked full time at reduced pay, we should, now that the company has recovered its financial position, and has declared dividends, make up to those who worked full time during the 22 months the difference between the pay they agreed to take and what they would have been entitled to in normal times, although during this, and a longer period, the shareholders received no dividends. The Directors have also taken into consideration the cases of those employees who received reduced pay, but did not work full time (these constituting the unskilled and lower-paid workers), and who must have undergone the same or perhaps greater hardships than those earning higher wages. The Board has given this matter earnest thought, and decided not to differentiate, but to act generously, and treat all alike by making up to those engaged in mining work for the 22 months ended June 30, 1916, the difference between the amounts they received and full pay, regardless of the number of hours they worked. The sum required to meet these payments exceeds £160,000, and the distribution of this, we feel sure, will assist our employees and their families to spend a happy Christmas, make more bright their New Year, and strengthen the good feeling and cordial relations which have always existed between the company and its employees.

Since the beginning of the war the difficulties encountered in running this big concern have enormously increased from year to year. The scarcity of mining supplies, etc., has sorely tried us at times; however, we struggled through owing to the foresight and ability of the General Manager and staff, and the loyal co-operation of heads of departments and their assistants, and of our employees generally, to whom we have given practical and substantial proof of our appreciation.

I may state gentlemen, that the dividend for the current six months will be declared before the close of the year.

Nothing further, I think, calls for remark, and I now have much pleasure in moving that the directors' report, the balance-sheet, and profit and loss account for the year ended June 30, 1918, be and are hereby adopted.

MR. G. W. COMPTON.

Mr. G. W. Compton seconded the motion, and said: Gentlemen, I do not intend to make a speech, but with your permission I should like to say a few words. You, I am sure, have all listened with great pleasure and interest to the Chairman's well-thought-out and informative speech—with which, I may state, I am in full accord—in which he has so ably placed the position of the Company before you. I think as shareholders we have cause for congratulation that the Company is in such a sound position. I regret that the Company, as the Chairman has told you, has lost many of its old and trusted men as a result of the recent epidemic, and I am sure we offer our sincere sympathy with their families. With these few words, I now beg to second the Chairman's motion for the adoption of the directors' report, balance sheet and profit and loss account for the past financial year.

The Chairman invited remarks from any of the shareholders present, but none were forthcoming, and the motion was unanimously carried.

RE-ELECTION OF DIRECTORS.

The Chairman: I have to report that, in terms of clause 84 of the Company's Articles of Association, Mr. S. B. Joel, Mr. Breitmeyer, and Mr. Ross Frames retire from office as directors of the company, but are eligible, and offer themselves for re-election.

Mr. Colin W. Lawrence: I shall have very much pleasure in proposing that the gentlemen named be re-elected directors of the company; but, before doing so, I should like to ask a question. I am sure all the shareholders have heard with great pleasure that it has been possible for the company to restore the amount to the employees to make up the difference between the reduced pay received during the twenty-two months referred to and their full wages. If my memory serves me rightly, the directors' fees were also reduced for that same period, and I would like to know if those fees are also to be paid.

Sir David Harris: I may say, in reply to Mr. Lawrence, that the Directors' fees are not included in the amount I mentioned in my remarks. We feel we could not do it on our own motion—off our own bat, as it were; and we have no intention of asking the shareholders to vote the difference between the reduced fees received and the amount we would have been entitled to in normal times. We have more regard for our employees than ourselves.

Mr. Colin Lawrence: I should like to suggest that, in order to make the Christmas of the directors a happy one as well, that they should also be voted the reduction in their fees made during that time. I move that Mr. Solomon Barnato Joel, Mr. Ludwig Breitmeyer, and Mr. Percival Ross Frames be re-elected directors of the company; and I should like to add that the directors also receive the amount making up their full fees.

The Chairman: I am afraid I cannot accept that as one motion. It would be out of order to unite those two resolutions. We must first deal with the election of directors.

Mr. Lawrence: I would put the election first then.

Mr. Newberry seconded, and the motion was carried unanimously.

Mr. Colin Lawrence: I should now like to move my second proposition, and I do so with great pleasure, because we all know the excellent work of the directors in administering the affairs of the company, and the tremendous amount of time they devote to their duties. I think, therefore, that the reduced fees should be made up in the same way as the salaries of the employees.

Mr. Arend Brink seconded, and said: I am here this morning in my capacity as a shareholder, and I also have the honour to represent a number of shareholders not present. I feel sure that during the period of the war the directors carried out their duties in the usual manner; indeed, they devoted more time to the business of the company than they do in normal times, because we passed through a very critical period. I have very much pleasure indeed in seconding the resolution moved by Mr. Lawrence.

Sir David Harris: Before putting the proposition to the meeting I should like to make a few remarks. Of course, the directors appreciate very much your kindness in including us with the staff and the employees of the company as far as making up to us the difference between the fees we received and what we would be entitled to in normal times. I need hardly tell you, considering the high cost of living, the amount would come in very useful to most of the directors, but we have discussed this matter amongst ourselves, and we feel that, although we are entitled to something, yet considering the uncertainty of resuming

work, and the difference it might make to the company, we would prefer that this matter should remain over to some future meeting. If next year—and please goodness we are all here, and normal working of the mines is resumed—you should feel in the same good temper as you are in to-day the money would be much more acceptable then, because a sovereign in those days will have greater purchasing power than it has to-day. We should then accept your kind offer with much less compunction than now. To-day we will take the will for the deed. As I have said, we have discussed the matter among ourselves, and if you will allow it to stand over we shall be very thankful.

Mr. Siew: I do not see why the meeting should not pass the resolution proposed by Mr. Lawrence, and then, if the directors like to let the matter stand over for a future time, that is their business. The meeting should do its duty and pass the proposition; then the matter can be left to the directors.

Sir David Harris: I am, of course, bound to put to the meeting any resolution you submit, but you now know our feeling on this matter.

Mr. Colin Lawrence: I would suggest putting the motion. If the chairman feels too modest to do that, I will do it myself. Let us put the resolutions to the meeting and carry it, and leave it to the directors' discretion to act upon it either now or when the mines resume working.

Mr. Hirschhorn: Will you allow me just to say that I think the shareholders will please the directors very much more if they leave the matter over until next year, as the Chairman has suggested.

Mr. Colin Lawrence: I am satisfied if that is your wish, and we will leave it over.

Sir David Harris: We thank you very much, all the same, but feel it would be better to defer the matter.

THANKS FROM STAFF AND EMPLOYEES.

Mr. I. R. Grimmer rose at this point and said: Mr. Chairman and gentlemen, unfortunately very few of the company's employees are shareholders of the company, and therefore only a small number of them are present at this meeting, and for that reason I am taking it upon myself to say, on their behalf, a word of thanks to the directors for making up full pay to those of us considered entitled thereto, and also to thank the shareholders for the manner in which they have received the chairman's announcement. We are all—staff and daily-paid men—grateful to the board and shareholders for making this generous concession. I think we may fairly look upon it as a concession, seeing that when the war broke out the outlook for the company was particularly black, and the cold-blooded course would have been to discharge every redundant man, retaining only those absolutely necessary. But the directors of this company have never been cold-blooded; and they offered to grant half-pay to those of us who cared to accept it rather than look for work elsewhere. Needless to say, we were glad to accept the offer, but now the board and shareholders are going to pay us the difference between what we actually received and our full pay; and, Mr. Chairman and gentlemen, speaking for myself and all the other employees of the company, I beg to thank you. The pleasure of returning thanks has devolved upon me, as our General Manager is not with us to-day, but is at the coast by the imperative orders of his doctor to enable him to recover from the labours and anxieties of those terrible weeks of sickness through which we have just passed.

APPOINTMENT OF AUDITORS.

Mr. T. R. English moved: "That Messrs. Howard Pim & Hardy and

Messrs. Salisbury & Beaton be appointed auditors for the ensuing year, and that the remuneration to be paid them be fixed by the directors."

Mr. B. Horkheimer seconded, and the motion was unanimously carried.

This ended the business of the ordinary meeting.

Extraordinary General Meeting.

ALTERATION OF ARTICLES OF ASSOCIATION.

An extraordinary general meeting of shareholders was held immediately after the annual meeting, at which Col. Sir David Harris again presided, and there were present the shareholders in attendance at the previous meeting.

The Secretary read the notice convening the meeting, and

Sir David Harris said: The amendments in the company's Trust Deed just read will, if adopted, have the effect of reducing the number of directors from 16 to 12, besides decreasing the expenditure under this head. On the formation of De Beers Consolidated Mines, Ltd., over 30 years back, which resulted in amalgamating the various concerns that then existed in the Kimberley and De Beers Mines, it was only natural that the different companies owning valuable claims in these mines should have stipulated a right to nominate representatives on the board of the consolidated company; hence the large number of directors provided for in the original Trust Deed. As the years rolled on the members of the board became more closely associated and identified with this company, and all idea of the necessity for protecting their respective interests disappeared. Originally the board consisted of four Life Governors and 16 Directors, of whom only three are alive to-day, namely, Messrs. F. Baring Gould, G. W. Compton and Sir Carl Meyer. We have now 12 directors constituting the board, and this number we consider sufficient to carry on the business of the company. We therefore appeal to you to adopt the amendments which we confidently recommend to the meeting.

Mr. Arend Brink then moved: "That the Articles of Association of the Company be altered in the manner following: In Article 84 (a) the word 'twelve' shall be substituted for the word 'sixteen.'" Mr. Brink explained that the Article would then read: "Until otherwise determined by a general meeting the number of directors shall not be more than 12."

Mr. Ernest Oppenheimer formally seconded, and the motion was carried unanimously.

Sir David Harris said that this closed the business of the meeting, and the proceedings concluded with a vote of thanks to the Chairman, which was moved by Mr. Colin Lawrence, and was cordially carried.

NEW MODDER.

Sir Evelyn Wallers, the chairman of the New Modderfontein Gold Mining Company, Ltd., in reviewing the year's operations at the annual meeting of shareholders on December 19th, outlined an eminently satisfactory state of affairs. He said: The facts and figures relating to the past year's work, which are fully recorded in the reports and accounts before you, speak for themselves. You will have observed that, notwithstanding the many disabilities of the times, marked progress all round is shown, and shareholders, I think, are to be congratulated upon the results obtained. The year's working operations resulted in a profit of £833,264 from 684,100

tons milled, these figures showing increases of £43,247 and 27,400 tons over the corresponding results for the previous year. The profit averaged 24s. 4d. per ton milled, the yield being 45s. 7d. and working costs 21s. 3d. After delays, over which we had no control, the new reduction plant was completed in April of 1918, but as the drums for the new winder at the circular shaft had not then arrived, it was decided to commence milling operations on as large a scale as possible with the limited hoisting appliances which had up to that time served for the development of the circular shaft section of the mine. In this way it was possible during the last three months of the financial year to add appreciably to the profits and at the same time to condition and test the efficiency of the new reduction plant. Looking at the figures for 1916 and comparing them with last year's, it will be seen that the yield has increased by 4s. 9d. and working costs by 4s. per ton as at 30th June last. The increase in costs calls for no particular remark, being common to all mines on these fields during the war period.

Yield Maintained.

The yield, however, was again higher than could be expected from the average value of our ore reserves. There are two reasons for this: the first is that on account of the constantly increasing working costs—caused mainly by prevailing conditions—it was considered expedient as well as legitimate, in view of the very strong ore reserve position, to continue the practice adopted last year of taking ore from the mine of somewhat higher value than the average value of the ore reserves, thereby counteracting the adverse circumstances and maintaining the level of profits; the second reason for the high yield is that—as was the case last year and the year before—the actual working results, particularly in the richest section of the mine, gave values considerably in excess of the block values as they appear in the ore reserve estimates. It may be noted that the second reason had a greater influence on the yield than the first, and it should be borne in mind also that shortage of native labour naturally necessitated a greater concentration of the force available than would otherwise have been the case. With an adequate supply, the labour available would of course be more widely distributed in the mine, and mining operations would be conducted more in accord with the average value of the ore reserves. At all events it will be clear to you not only that we are in an enviable position in being able to combat disabilities by raising our grade at will, without straining our position in the least, but also that our ore reserve estimates have continued to be framed on very conservative lines. As bearing upon this latter feature, you will have noticed that the average grade of the ore developed during the year under review was lower than the grade mined, due mainly to the fact that practically no development was done in our richest areas; nevertheless it was possible to show a slight improvement in the average value of the ore reserves at the annual revision of the position at 30th June last. This requires a little explanation, i.e., that although the rather abnormal richness of certain large blocks of ground, particularly between the 8th and 10th levels east of No. 12 Shaft, has compelled our officials to be very cautious in their estimates, this section of the mine in particular has continued to yield ore of a value considerably above our legitimate expectations. We need not, however, complain about that.

Development Footage.

A comparison with the previous year's figures will show that the development footage accomplished has fallen very considerably, being 27,117 feet in 1917 and 13,661 feet in 1918. On the fact of it this appears to be a very serious decrease, and I will anticipate inquiry on this point by recalling the fact that in the previous year we took advantage of the then abundant supply of native labour to push development operations for the first six months of the year very energetically, particularly in the Circular Shaft Section, with the consequence that the development footage for that year was in reality abnormally high. The development footage for the year under review is little, if anything, below the footage required to maintain our ore reserve position. In fact, as you will see from the reports before you, the tonnage of payable ore developed during the last year amounted to 823,500 tons, while the tonnage mined from the ore reserves amounted to 658,723 tons. Our position therefore was more than maintained on that year's work; and even on the basis of crushing, say, 100,000 tons a month, which our plants are now capable of doing and the mine capable of producing, the mine is in such a condition that it would not require a very much larger development footage than that accomplished last year to replace all the ore taken from reserves. The point to bear in mind in this respect is that, given the necessary native labour, it is possible in our mine, by concentrating upon development work for even so short a period as, say, six months, to bring about the addition of very large tonnages to the reserves. Labour, as I have indicated, is the essential factor. Given a reasonably adequate supply there is not the slightest doubt that we can maintain our position with ease, and viewing our situation generally, I can only repeat the opinion I expressed last year, that we are indeed fortunate in possessing an extremely sound development and ore reserve position.

Ore Reserves.

The ore reserves as at 30th June, 1918, consisted of 9,000,000 tons of a value of 8.6 dwts. per ton. This reserve can be seen from a reference to the map accompanying the annual report to be fully developed and conveniently situated to either of the reduction plants, the underground arrangements being very elastic. The following information relating to the claim property as at 30th June last may be of interest to you. The total claim area of the property is 1,901 claims, of which the barren area north of the outcrop amounts to 363 claims and the worked out area at 30th June amounted to 241 claims, leaving approximately 1,624 claims. Of this balance approximately 283 claims are represented by the ore reserve. The accumulated unpavable area developed to date covers 96 claims, whilst the undeveloped area stands at approximately 639 claims. It is interesting and gratifying to note that the area equivalent to the ore reserve is greater than the total area worked out since the commencement of operations in 1895.

Working Profit £833,264.

Turning now to the financial results for the year, the working profit, £833,264, after adding the income from interest, exchange, freehold and sundry revenue, and deducting amounts expended under the headings of miners' phthisis compensation fund and various donations, was increased to £850,878. Adding to this the un-

appropriated balance from the preceding year, viz., £354,906, and a small sum representing forfeited dividends, the funds at the company's disposal totalled £1,205,965. This was dealt with as follows:—Two dividends of 15s. and 17s. 6d. per £4 share absorbed £568,750; taxes including adjustments for the preceding year amounted to £110,706, and the net sum expended on capital account, after deducting £62,533 received under the Bewaarplaats Moncys Application Act, was £219,765. The unappropriated balance carried forward at £306,744 consisted of stores and materials valued at £154,297, cash £72,667—of which £19,000 is invested in British war loans—and certain other items scheduled in the directors' report. The large sum expended on capital account was on account of the new reduction plant, underground equipment, a new native compound near the circular shaft, and additional quarters for married employees.

The new reduction plant which consists of 56 Nissen stamps, 8 tube mills and every requirement to deal with some 45,000 tons a month, has, as I informed you a year ago, cost a great deal more than originally estimated owing to circumstances beyond our control. While this fact is, of course, a matter for regret, yet the plant is paid for or provided for, and I feel sure that shareholders must view their situation to-day with no small amount of satisfaction. Several years of very valuable time have been gained by following a bold policy, and we now possess reduction plants capable of dealing with 100,000 tons of ore per month, which quantify the mine is fully equipped to supply so long as sufficient native labour is available.

Recent Results.

Since the close of the financial year, results have been achieved above anything hitherto shown in the past. By the end of September the erection of the new circular shaft winder had been completed, the change over took place in the first fortnight of October, and since that date the machine has been in operation and the whole equipment has given every satisfaction. For the first five months of the current year the tonnage milled averaged 72,600 tons a month, and the profit £90,285 or 24s. 10.5d. per ton milled. Working costs at 20s. 3.7d. are about 1s. per ton lower than for the past financial year and will no doubt show a substantial further decrease as the tonnage output increases and general conditions become more normal. Until native labour becomes more plentiful we shall not be able to operate the two reduction plants to their full capacity, and while the shortage, due as you are aware to the influenza epidemic, continues, it is our intention to work the new plant to its full limit, i.e., about 45,000 tons a month, leaving the spare capacity in the old plant. The object here is twofold—first, fully to test the possibilities of the new plant, and, second, to put the major portion of our tonnage through a more up-to-date and efficient plant; by this means we hope to secure lower reduction costs.

Capital expenditure for the first five months, namely, to the end of November, totalled £60,953 in connection with the completion of outstanding constructional votes. The liabilities remaining in this connection amount to some £29,000, which will mostly be spent during the current financial year. From now onwards commitments on capital account should be reduced to very small pro-

portions. We propose to increase the dividend distribution for the current half-year from 17s. 6d. to 24s. per share.

Influenza Epidemic.

The recent epidemic of influenza caused a good deal of disorganisation on the property, and a few figures in this connection should be noted. The total white population resident on the property was 956 men, women and children, of whom 183 were attacked by the illness, but, happily, only one death occurred. The total coloured residents numbered 4,685, of whom 872 were attacked and 61 succumbed. These figures afford eloquent testimony to the energy and ability exhibited and the success achieved by the medical and mine authorities in dealing with this virulent attack.

Housing of Employees.

We again spent a considerable sum of money last year on the housing of our employees, and we must still spend some more in the current year—obviously the right thing to do with a financial position and assured life such as ours. The general amenities of life for our people on our property are very happily in evidence, and the workmen, the officials, the underground manager, Mr. Tillard, and last but not least, the manager, Mr. Miles Sharp, pull together admirably. To them all and to Mr. Stuart Martin, the consulting engineer, who continues to direct the technical affairs of this company with great ability and distinction, I wish to offer the congratulations and the thanks of shareholders and directorate alike.

I now beg to move that the directors' report and balance sheet for the period ended 30th June, 1918, be adopted.

Promises Redeemed.

Mr. S. C. Black said: In seconding the adoption of the report, I think shareholders will agree that the mine is now in a position to reward them with all that had been promised for the past few years. It is sometimes inconvenient to be reminded of past forecasts, especially in gold mining undertakings, for but too often, as our American friends would say, "the performance does not come up to the advertisement," but if I may be permitted to express a note of personal satisfaction, it is to refer to what I said at the annual meeting in 1914, three months after the outbreak of war. On that occasion I stated that this company should perhaps before very long outstrip in profit making all rivals on the Witwatersrand, and I added "it was a wonderful gold mine, among the list of remarkable ones, and that many shareholders did not grasp the potentiality of their own property." I am inclined to think they all do now, and if, as you have just stated, given a satisfactory supply of native labour and we get to normal conditions, the New Modderfontein Company will not belie the confidence of those who have pinned their faith to it. With these few remarks I beg to second the adoption of the report and accounts.

The Native Supply.

Mr. J. Andrew Cohen said: Sir Evelyn Wallers has, with his usual frankness, reviewed the past year's operations in detail so I need not traverse that ground. I observe, however, a distinct note of optimism as to what may be expected from this property in the future, provided the present disability concerning the native labour supply is removed. Admitted that the immediate outlook in

that direction is disquieting, I am at least hopeful that this trouble will prove ephemeral and by the end of next quarter I look forward with confidence to witness the mine being worked to the maximum of its plant. There are, of course, two ways of achieving this result, primarily by being able to recruit a sufficient number of native workers to satisfy the demands of all the mines, or alternatively by a more practical distribution of native workers into channels where substantial profits can be earned by their labours instead of continuing what I believe to be the mistaken policy of using that energy to prop up the dying mines on these fields. In emphasising this point I wish it to be clearly understood I am only expressing my own views on this question and indeed by colleagues on the Board may not share this opinion. I cannot help feeling, however, that if the industry is to expand naturally some such steps might be worthy of serious consideration. For example, New Modderfontein has fulfilled every promise foreshadowed by its respective chairmen. The ore reserves, as prophesied two years ago, have reached the substantial figure of 9,000,000 tons: the new plant has been designed, erected, and is now working satisfactorily and, in the ordinary course of events, would be crushing 100,000 tons per month, so, insofar as human effort is concerned, the sponsors for this company have fulfilled their promise, and the shareholders have willingly footed the bill. The only thing now required is an adequate native labour supply to enable us to go full steam ahead, and, as already stated, I am hopeful that some solution to this difficulty is near at hand.

The Upper Leaders.

In regard to the mine and its future possibilities, leaving aside the known factors for the moment, I am naturally impressed by the remarks made by the consulting engineer, Mr. H. Stuart Martin, in the report now in your possession, i.e., that prospecting of the upper leaders, particularly in the central section of the mine down to and including the 14th level was continued with success. I interpret this as an indication that by the inclusion of these leaders the tonnage per claim will be materially increased, thereby prolonging the life of the mine and adding additional value to the known and undeveloped ore reserves, a factor that should not be lost sight of when making future calculations. It has been my privilege on previous occasions to add on your behalf my sense of appreciation of the excellent work performed by all the heads of departments, and I should like to take this opportunity of saying how much shareholders are indebted to those gentlemen who have been responsible for designing and erecting the new equipment which will be the means of spelling additional prosperity to this vast and important company.

There was no further discussion, and the report and accounts were adopted unanimously.

The appointment of Sir Harry Ross Skinner to the directorate was confirmed. Messrs. S. C. Black and C. S. Goldman the retiring directors, were re-elected and the auditors, Messrs. C. L. Andersson and Co., and Deloitte, Plender, Griffiths, Annan and Co., were reappointed.

ZAAIPLAATS TIN CO.

Sir T. K. Murray presided over the annual meeting of the Zaaiploats Tin Mining Company, Limited, on December 13. In the course of his speech in moving the adoption of the report and balance sheet, he said: The reports and accounts submitted to you at our last general meeting showed very unsatisfactory results. Fortunately, gentlemen, we have a very different position disclosed before us to-day. The accounts show better results from the working of the mine than they have shown for the past four years. It will be seen that the profit on actual working amounted to £65,543. Against this, however, there are some charges, particularly in respect of Government Royalty, which reduces the profit for the year to £52,185. This sum, together with the balance carried forward from the previous year, viz., £13,569, has been appropriated as follows: For the purchase of additional ground, £17,500; for expenditure on plant and equipment, £1,705; for a reserve fund, £10,000; for payment of a dividend of 1s. 6d. per share, £19,125; leaving a balance to be carried forward of £17,425.

It will thus be seen that the financial position of the company has been considerably strengthened during the year under review. The chief causes for the improved results may be summarised as follows: (1) The smelting of the concentrates and the disposal of refined tin instead of selling the concentrates to outside smelters. (2) The increase in the price of the metal on the London Metal Exchange. (3) The improved condition of the mine. With regard to the first mentioned cause, it gives me great pleasure to be able to reiterate the remarks I made last year when I informed you that the company had successfully embarked on the policy of converting its concentrates into metallic tin, for throughout the year the whole of the output has been smelted and tin of a high-class quality has been produced. A small sample was sent to Messrs. Watson & Co., of Liverpool, for the purpose of ascertaining how the class of metal we were producing would be likely to be received on the English market and in reply we received the following letter: "With regard to the sample of tin you sent us, we enclose an original letter from Mr. Knight, who makes assays of tin for the London Metal Exchange. If you can ship tin of this description, we can readily place it on the market here. Verbally, Mr. Knight told us he had never seen better tin." Mr. Knight's report reads as follows: "I have very carefully examined the sample of tin and find that with the exception of .006 per cent. copper, there are only faint traces of arsenic, lead, iron and bismuth present. The metal is of very good quality. I think I am safe in stating that it is over 99.99 per cent. fine."

The Price of Tin.

During the past year, chiefly owing to our smelting operations, there has been no difficulty in disposing of our output at satisfactory prices; but, as you all know, the price of tin varies considerably from day to day. On one occasion the price actually reached the phenomenal figure of £398 per ton on the London Metal Exchange. The average price of cash standard tin for the last six months of the year amounted to £336 per ton. At present there is a considerable drop in the price, and it is difficult to gauge how prices will rule in the future. I am, however, of opinion that when peace is concluded and all ordinary business resumed, there will be a great demand for this metal. Stocks of tin and tinware all over the world must be very

low. In any case now that we are producing a high-class metal, we should be able to dispose of any surplus of our outputs in the world's markets after South Africa's requirements have been filled.

The accounts before you show very clearly the position of the company, and the results of running the mine during the year and do not need any further elucidation from me.

Work at the Mine.

Turning now to the work at the mine, you have before you, annexed to the directors' report, the reports of the consulting engineer and mine manager, which give full information respecting the work accomplished during the year. One of the chief features is the continued production of high grade ore from No. 13 section. Since the close of the company's year there has been little change in the development in this section, the position to-day being if anything more satisfactory and encouraging. As a matter of fact when I saw the mine last week, No. 13 section was looking exceedingly well.

Another interesting feature of the year's development is the long continued steep dip of No. 13 ore body. Unfortunately, the shortage of native labour has prevented the carrying out of a progressive programme of development in any other sections of the mine—work having chiefly been centred in Nos. 5 and 13 sections. In the former no discoveries of any great importance were made; the prospects are, however, hopeful, and as soon as the native labour position improves work will be pushed ahead in this section.

When we met last year I referred to an extensive piece of work which had been undertaken for the purpose of connecting up Nos. 6 and 13 sections. This work has been successfully completed and the saving in costs and the improvement in working conditions have fully justified the undertaking. The whole of the expenditure incurred in making this connection has been charged to working costs. I also referred last year to an option which the company had secured over certain ground adjoining your company's property and known as "Zaaiploats Valley Alluvial." Abnormal rainfalls gave rise to great difficulty in testing the value of the ground during the option period, but your directors were able to secure an extension of the option. It was not until June that the work of inspection was completed. The ground was found to contain a large tonnage of payable alluvium, and on the recommendation of the company's technical advisers, your directors decided to purchase the property, which is about 28 acres in extent.

The arrangements for exploiting this alluvial ground contemplated the treatment of upwards of 20,000 tons per month. It was found advisable, however, (chiefly on account of the unfavourable native labour position) to proceed at once with the construction of a temporary plant for the treatment of a much smaller tonnage—the idea being to open up the ground with this temporary plant and to put the larger plant into operation when the native labour position improved. The influenza epidemic has, however, upset our arrangements for the time being, and it will be a matter of the utmost difficulty to do any work at all until the natives have fully recovered from the visitation of this epidemic. We do not look forward to any radical change in the labour position before the end of January next. In the meantime efforts are being made to keep a small gang of boys at work so that when the labour supply does improve, the working places will be in a position for immediate expansion, and a considerable addition to our outpost should result.

The Ore Reserves.

It will be seen from the manager's report that the ore reserves consist entirely of residues. An attempt was made during the year to accumulate a surplus of high grade ore, but no progress could be made on account of the low tonnage mined. Every effort is being made during the current year to create a reserve of ore in the form of dumps.

I have endeavoured, gentlemen, to put the position of the company clearly before you. We have had a very successful year, and we have reason to believe that the company will continue to do well in the future.

Before concluding, I wish to express the directors' appreciation of the excellent services rendered by the manager, as well as by the mine and head office staffs. Mr. Gilbertson, the manager, deserves great credit for the good work he has done, particularly in so successfully tackling the problem of smelting, and I have pleasure in saying that the directors have decided to vote him a bonus of 250 guineas in recognition of his services, as it was entirely owing to his labours that the smelting was undertaken and the profits of the company increased thereby.

I now formally beg to move that the directors' report and statements of account for the year ended 31st July, 1918, be approved and adopted and that the action of the directors in declaring interim dividend No. 17 of 30 per cent., be confirmed. It was also decided to declare a further dividend for the next half-year of 1s. 6d. per share. It was possible to declare a still further dividend but the directors wished still further to strengthen the reserve.

A proposal was moved by Mr. Morley, and seconded by Mr. Wagner, that Mr. Gilbertson's bonus be one thousand guineas. This was carried. It was also decided to suitably recognise Mr. Webber's services as secretary to the company.

The report was adopted, and Mr. J. Munro re-elected a member of the board. The membership of the board was increased to five, Mr. R. H. Morley being added. The auditors were re-elected, and the chairman thanked for presiding.

GLYNN'S LYDENBURG.

Mr. H. C. Boyd, the chairman of Glynn's Lydenburg, Ltd., in presiding at the annual meeting of shareholders December 18, said: Gentlemen,—The report and accounts for the year ended July 31st last, are submitted for your approval. Shortage of native labour handicapped operations throughout the year, and the effects of the severe floods experienced in the early part of 1918 were felt for some months; consequently only 46,964 tons were milled. These conditions, combined with the added expenses due to the war, now so happily ended, led to an increase in working costs of some 1s. 9d. per ton, while the yield was nearly 2s. per ton lower than that of the preceding year, and the net profit of £29,840 was about £11,300 less than that shown in the last accounts. Two dividends absorbing £27,625 were declared, taxation was relatively light owing to adjustments in respect of previous payments, and the balance carried forward was increased to £30,427, of which £17,452 were net cash after providing for all liabilities.

Taken as a whole the results of the year's development were highly satisfactory. Mill Hill section is being

gradually worked out, and the ore reserves there at the close of the year showed a natural decrease. In the werf section, despite the severe hindrance caused by the flooding, the reserves increased on balance by over 8,000 tons of improved value. A well-thought out drainage scheme has just been completed, which should safeguard us against any repetition of last year's troubles. Sinking of the Osborne Shaft was resumed early in October, but has since been interrupted. In Compound Hill the reef disclosures came fully up to expectations, and the reserves there show additional 35,200 tons, while the average value is higher by 1 dwt. per ton. The total ore reserve of nearly 139,000 tons of an average milling value of 9.8 dwt. is decidedly the best in the history of the company.

In view of the excellent results in Compound Hill, 165 claims were pegged on its southern extension. The fact that good reef has been exposed on the southern boundary of these claims is extremely encouraging. The disclosures to be made in this area will have an important bearing on the future of the company.

The Epidemic.

As the consulting engineer points out, the yield for the past year was not representative of the capabilities of the mine—the better yield secured during the early months of this financial year is confirmatory of this—and with the greatly-improved ore reserve position we were justified in looking forward to a prosperous year if a reasonable native labour supply were available, but unfortunately the disastrous influenza epidemic struck the mine toward the end of October and operations were virtually suspended till quite recently. All possible precautions had been taken, but unfortunately 73 natives died on the property, and learning of the sufferings of their families almost all the remainder returned to their kraals, where we fear an appreciable number died. Half the white employees were affected by the disease, and to our great regret Mr. W. Gallant, mine captain of the Werf Mine section, who had been with the company for many years and done excellent work, succumbed. Urgent representations were made to Government and steps were taken to render assistance to the natives in the kraals and latterly to encourage them to return to work; this they have been doing more satisfactorily during the past few days, and we now have about half the normal number at work. The profit for October was reduced to £674, while for November a loss of £1,517 was incurred. Five stamps have been dropping for some weeks, and we have just been advised that ten are now running; a gradual improvement in conditions is looked for, but it is not yet possible to say when operations will return to normal. To our regret, Mr. R. C. Warriner resigned his position as consulting engineer last January, and toward the end of the past financial year Mr. E. H. Clifford, who is well acquainted with the mine and district, was appointed in his place. To Mr. G. Damant, the manager, and the staff generally, our thanks are due for their continued good work. I now beg to move that the report and accounts for the year ended July 31st, 1918, be received and adopted.

The motion was carried, and Sir Evelyn Wallers and Sir Abe Bailey, the retiring directors, were re-elected.

ELANDSFONTEIN ESTATE CO.

Mr. D. Christopherson, C.B.E., presided at the annual meeting of the Elandsfontein Estates Company on December 13th, and in moving the adoption of the report of the directors and accounts said: The profit and loss account showed that the revenue during the past financial year was £3,098, as compared with £3,761 for the previous year, but in the latter period there was included an amount of £746 received from the Government by virtue of the Fewaarplaats Moneys Application Act, 1917, otherwise the ordinary revenue of the past year was just about the same as before. The expenditure was £2,322, or £451 more than previously; that was almost entirely accounted for by an increase of £332 in respect of municipal assessment rates; and by an increase of £96 under general expenses, which mainly arose owing to expenditure incurred in connection with the filling up of an old, disused and unprotected shaft on the company's property. The amount carried to the appropriation account was £776, which, together with the balance of £2,268 at 31st October, 1917, made a total of £3,044. During the year under review a dividend of 6½ per cent. was paid, absorbing £1,950, and £1,094 was carried to the balance sheet. There was nothing in the balance sheet that called for notice, except that the amount of £639 16s. received from the Government in the form of Union of South Africa 5 per cent. Local Registered Stock, in respect of moneys due at 30th June, 1917, under the Fewaarplaats Moneys Application Act, 1917, was shown as an investment.

Mr. Kent seconded the motion, which was carried. Messrs. R. des Clayes and D. Christopherson were re-elected directors, and the auditors, Messrs. Douglas, Low and Co., were reappointed.

Those present at the meeting were Messrs. D. W. Rossiter, J. H. Keegan, W. S. Smits, W. S. Saunders, J. E. Kent, V. J. Ronketti, A. E. C. Hocking and F. H. Down (secretary). There were represented personally and by proxy 23,354 shares out of an issued capital of 30,000 shares.

SOUTHERN VAN RYN REEF.

An extraordinary general meeting of the Southern Van Ryn Reef Gold Mining Co., Ltd., was held December 17 in the board-room, Consolidated Goldfields Buildings, Johannesburg, in pursuance of a requisition signed by members holding in the aggregate not less than one-tenth of the nominal amount of the issued capital of the company to consider and, if approved of, to pass a resolution removing Mr. E. G. Clifford-Jones from his office as a director of the company. The meeting had been postponed from last week on account of the armistice celebrations.

Mr. W. E. Bleloch proposed the motion to the above effect, and Mr. Clifford-Jones, in reply said that Mr. Bleloch, with the large number of shares at his disposal, could carry the motion, and it was therefore of no use for him to fight the matter; all he could do at present was to vote against the motion. If the motion was carried he intended to carry the matter further.

The motion was carried.

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Notes and News.

A batch of dividend notices appears this week, and our next issue will contain our customary complete list for the year. The directors of the Nourse Mines, Limited, and Village Deep, Limited, "regret to announce that as the operations for the half-year ending December, 1918, have been very seriously affected by the shortage of native labour, and as supply for the near future is unsatisfactory, it has been decided not to declare a dividend for that period."

* * * *

We have received advice from the Secretary of the Geduld Proprietary Mines, Ltd., that, owing to unavoidable delay in the engraving of the option certificates by the printers, **Ceduld Delivery of New Shares and Option Certificates.** it will not be possible to deliver scrip and relative option certificates to acceptors of new shares in South Africa until about the third week in January next. Acceptors desiring delivery of scrip and option certificates by post are requested to forward their official receipts under registered cover to the head office of the company, P.O. Box 1125, Johannesburg.

* * * *

At this week's quarterly meeting of the Transvaal Chamber of Mines, the President, Sir Evelyn Wallers, was the recipient of warm **Congratulations to Sir Evelyn Wallers.** congratulations upon the honour recently conferred upon him. After the President had moved the adoption of the report of the executive, Mr. H. Newhouse said that before the report was passed they would all like to express their great gratification at the high honour which had been conferred upon their chairman. (Hear, hear.) In this matter he was certain that everybody would be at one with the executive—which had worked with Sir Evelyn Wallers for years—in the feeling that there could be no man who was more deserving of such an honour. They all felt that without his able guidance the industry could not have worked through such trying years in the way it had—not entirely without disturbance, but at any rate with disturbances of a trifling nature. This success, which was in the best interests of the Empire, and indeed necessary to its well-being, was beyond all doubt first of all due to Sir Evelyn Wallers. (Applause.) The Chairman, in his reply, thanked those present for the manner in which they had received Mr. Newhouse's very kind remarks. He felt sure they would agree that the honour done to him was an honour done to the industry, and in expressing their appreciation he also wanted to make it clear that it was an honour which he felt must be shared, and was shared, with a great number of people attached to the industry, and certainly not least with those permanent officials of the Chamber who in the public work which he had to do had been to him a tremendous support. (Applause.)

* * * *

During the year to September 30, 1917, the gross revenue of the Rhodesia Railways increased £87,153 and the net earnings £38,521, as compared with the previous twelve months. There was a general increase in all important classes of traffic, with the exception of chrome ore, and, in particular, traffic in imported mining machinery and construction material, and in timber, cement, copper, and coal of South African production showed substantial advances. In the first nine months of the current financial year the gross revenue increased £14,167, but as the working expenditure rose £23,943, there was a net falling off of £9,776, due to some extent to the interruption of traffic in February and March owing to the floods that occurred east of Salisbury. The net revenue account shows a credit balance of £172,063 and an available total of £555,150. A special reserve of £69,668 has been set aside to meet current arrears of maintenance, and

£300,000 has been placed to the general reserve. The credit balance is thus reduced to £185,482, out of which the directors recommend the appropriation of a sum of £80,000 for the payment of a dividend. The amount of the suggested dividend is not stated.

* * * *

The report of the enquiry by two officials of the Department

The Closing of the Bantjes.

of Mines and Industries into the closing down of the Bantjes Consolidated Mines, Ltd., appeared in the last "Government Gazette." The report is signed by Mr. Malcolm Fergusson, Inspector of Mines, and Mr. M. Sutherland, Mine Surveyor, and the position is summed up in the concluding paragraph as follows:—"We consider that the policy adopted by the company of conserving its resources with the object of exploring its ground and of resuming mining operations to better advantage at some later date in preference to exhausting them at a very small profit, or possibly no profit at all, to be the correct one and the one likely to be more beneficial to both shareholders and the State." A covering note by Sir Robert Kotze, in submitting the report to the Secretary of Mines and Industries, states that "there does not appear to be a *prima facie* case for calling upon the company, under section 107 of Act No. 35 of 1908, to furnish reasons why mining operations have ceased."

* * * *

From all the gold producers of the world the latest returns portray waning figures, and the following shows the established diminution from British possessions for the half-year to 30th June, 1918, in comparison with the corresponding period of last year:—

		Half-year to 30th June, 1917.	Half-year to 30th June, 1918.	Decrease
Transvaal—				
Ounces ...	...	4,572,936	4,256,334	316,602
Value ...	...	£19,424,597	£18,079,762	£1,344,835
Rhodesia—				
Ounces ...	...	419,880	334,216	85,664
Value ...	...	£1,784,491	£1,420,421	£364,070
West Africa—				
Ounces ...	...	181,720	163,614	18,106
Value ...	...	£754,702	£697,416	£57,286
Australasia—				
Ounces ...	...	878,383	773,000	105,383
Value ...	...	£3,733,127	£3,285,250	£447,877
India—				
Ounces ...	...	61,518	58,254	3,264
Value ...	...	£261,452	£247,583	£13,869
Canada—				
Ounces ...	...	411,224	*400,000	11,224
Value ...	...	£1,747,701	£1,700,000	£47,701

Total decrease from British Possessions—

Ounces ...	540,243
Value ...	£2,275,638

* Approximate.

From other producing countries complete figures are not yet to hand, but decreases will be shown. America: The output is much less on the figures as yet known. For the half-year to 30th June, 1917, the production was 2,042,745 ozs., value £6,681,870. Mexico: A decrease will be shown when complete returns are to hand. The 1917 half-yearly figures were 180,000 ozs., value £765,000. Russia: No returns to form a reliable estimate; a decrease is certain. Last year's figures for the six months to 30th June were put at 500,000 ozs., value £2,175,000. Other producing countries, although of small figures, will show collectively a material decrease.

* * * *

At the last meeting of the S.A. Institution of Engineers, the President of the Chamber of Mines paid

Important Paper on Rock Drills.

H. S. Potter, on the subject of "Rock Drills." We hope to be able to reprint Mr. Potter's paper in an early issue.

In his speech at Springs in the Union, Mr. Malan made certain references to the tariff question which, if they were to be accepted in the literal sense of the words employed, might be regarded as

Tariffs and Industries in the Union.

rather ominous, says the *Cape Times*. The Advisory Committee, he stated, had been instructed to draft a tariff of Customs duties "which would enable South African industries to keep their heads above water, and prevent the country from becoming a dumping ground for other countries." During the past three or four years industrial development in South Africa has unquestionably been very rapid, and we have seen from time to time in the reports of the General Manager of Railways and the Census Department that a really considerable amount of industrial activity has sprung into being throughout the Union under conditions which have amounted in many cases at least to the most extreme form of protection, namely, the exclusion, owing to war conditions, of competing products from overseas. Many of these new industries are legitimate industries which perhaps would not have come into existence so soon but for the enforced protection they enjoyed, but are natural to the country, and have already established themselves pretty firmly. Others, however, are essentially transitory and could not be expected to survive the competition of normal times. If the Acting Prime Minister's speech is to be interpreted as meaning that the Government has in contemplation a policy of protection which will enable all industries established during the war to "keep their heads above water," there is likely to be some trouble in the not distant future. Such a policy must mean that every legitimate industry will be penalised in order to bolster up illegitimate industries. It means that the cost of living will certainly not decline; it will probably increase; and it means that industrial progress along healthy and natural lines will be gravely handicapped. For these reasons we assume that Mr. Malan was speaking in rather more general terms than he intended. His speech is probably nothing more than a reminder that the Customs Tariff investigation which the Industries Advisory Board began eighteen months ago is still in progress.

* * * *

One of the various reasons adduced in Germany for the desired return of that country's former colonial possessions lies in the deposits of copper in South-West and East Africa and New Guinea, whilst at the same time

Copper for German Industry.

eager glances have been directed towards the mineral riches in the Belgian Congo. It seems quite a grievance to Christian Pfrank of the Oriental Seminary of the Berlin University, that with a domestic copper production of only 39,000 tons in 1912 Germany was compelled to import 200,000 tons in order to assist in meeting the total consumption, and that 85 per cent. had to be procured from the United States at the prices arbitrarily fixed by American producers. Although the copper deposits in South-West Africa had only been slightly opened up prior to the war, it is considered that they would be able, in the course of time, to meet a considerable portion of the German home demand for copper, and thus break the monopoly of the United States. The copper ore deposits in the Katanga district of the Belgian Congo are said to be enormous, and C. Pfrank states that "with such a possession we could cover our whole requirements within a not distant period, and consequently provide our important electricity industry with its thousands of workmen with an assured position for ever." This is surely an intimation of what the Belgians might have to expect if the Germans were ever permitted again to become established in Africa. It is contended finally that the Germans could only liberate themselves from paying tribute to the United States for copper by possessing their own colonies with rich copper deposits, and that therefore no peace should be agreed to without the return of German South-West Africa. It is highly probable that the Germans will reach a different conclusion before very long.

The position of Crescens (Matabele) Mines and Land Co. is set out in the annual report and the statement of Mr. Hubert B. Vaile, the chairman, at the annual meeting recently.

Crescens (Matabele).

The main features may be briefly summarised as follows: A strong cash position, having regard to the modest capitalisation, valuable assets, and energetic and capable administration. Investments figure at £18,792; sundry debtors (representing almost entirely balances due in respect of land sold and bearing interest at 6 per cent. per annum) amount to £7,727; and cash in London and Bulawayo at June 30 was £1,435. These three items alone, deducting the amount absorbed by the 7½ per cent. dividend just declared, total £23,933, or, roughly, 33 per cent. of the issued capital of the company—in other words, about 3s. 4d. per share. Last year's profit was £4,145, which admitted of a dividend of 7½ per cent., less income tax, as compared with 5 per cent. free of tax for the preceding year, the carry-forward being £744, as against £620. The prospects for the current year, however, are distinctly better. The company's principal asset, it must be remembered, is its large land holding, which is steadily appreciating in value. It is, indeed, from the sale of farms that the company mainly derives its revenue. During the financial year ended June 30 last, 11,335 acres of the Main Belt block were sold at a profit of £3,619, but since then the demand for the company's land has increased, offers having been accepted for a further 19,500 acres on the Main Belt block and 19,715 acres, representing the whole of the Kodhwayo block. The company is now left with 402,348 acres of land, equal to about 630 square miles, and having regard to the growing demand for land in Rhodesia, at higher prices than heretofore, Mr. Vaile says: "I think there can be no doubt that the values placed upon the company's land some six or seven years ago need overhauling and revising." He anticipates that the unsold farms on the Main Belt block, representing the pick of the Rhodesian basket, will find early and eager buyers at prices considerably in advance of those now ruling.

* * * *

Writing in mail week, Messrs. Morrison, Kekewich & Co. report that the tin market was dull, with business very small and quotations unchanged. Spot and three months standard closed at £333 10s.—£334 10s.;

Metal Markets in Mail Week.

settlement price, £334. Reporting on the week's business in metals, Messrs. Morrison, Kekewich & Co. say:—Copper: So far as the home position is concerned there is nothing fresh to report. American advices refer to a better output of refined during the past month, and it is believed that this improvement will be maintained. In connection with prices it is pointed out that refinery costs have increased a good deal since the previous price fixing, but it may be doubted whether this alone would justify an increase in the official maximum unless it could be shown that an increase in the production of refined metal would result therefrom. Cash and three months standard closed at £122—£122 10s.; tough and best selected, £136—£131; electrolytic, £137—£133; strong sheets, £161. Tin: The tendency all round seems to be towards stabilisation in prices. In America the buying and use of the metal will be licensed on similar lines to those here, an official quotation is likely to be fixed by the New York authorities, and strict attention will be paid to the matter of allocations so as to secure economy in use. It is understood that the inter-Allied arrangements for the control of production in all centres have now been completed. The standard market has been very quiet on the whole, excepting one day when the demand showed more activity, but the inquiry was soon satisfied and the tone again became dull, and quotations show no change on the week. Cash and three months standard closed at £333 10s.—£334 10s. Lead: Remains steady at £29 10s. to £28 10s. Silver: Is unchanged, and the official maximum is not likely to be altered unless cheaper freights and insurance permit a reduction. Iron and steel: There is no change to report in quotations. Demand all round continues as urgent as ever, and deliveries to consumers are being hindered by shortage of trucks apart from inadequate production, though everything is being done to develop the latter as much as possible.

TOPICS OF THE WEEK.

THE POSITION OF THE INDUSTRY.

THE speech of the President of the Chamber of Mines from the chair at the quarterly meeting this week furnishes a timely review of the position of the industry at the end of a momentous and critical year. That, unfortunately, the end of the war does not mean the end of the troubles and extra burdens of the industry was made clear by the President. "During the period of the war this industry has been faced with ever-increasing difficulties," he said, "and, as I stated to you at the last quarterly meeting of the Chamber, we have hung on remarkably well—really amazingly well as regards gold production, but not as regards profit. I wish I could say that with the cessation of hostilities our difficulties had appreciably diminished. Such is not, nor likely to be, the case for the present. On the contrary, we have to look forward for a considerable period yet to a continuance of the burdens produced by the war, and some time must necessarily elapse before the mining companies experience any material reduction in the cost of supplies." In one direction the President of the Chamber expects that the industry will get immediate relief, namely, in regard to the additional charge of some £400,000 per annum for freight, insurance, etc., that it had to bear during the war as a result of the arrangement made by the Bank of England for the handling of the gold output. "We cabled on the subject immediately the armistice was proclaimed," said the President, "but have not received any definite information so far. Indeed, I feel that in the peculiarly difficult conditions of our industry we can reasonably ask that this question should be pursued further, and that the whole arrangement from its inception should be the subject of very sympathetic review on the part of the Bank of England and the Imperial authorities." Having shown how the influenza scourge and native labour shortage have further hampered progress, Sir Evelyn Wallers proceeded to discuss some of the particular problems that will naturally accompany peace. "Chief among these latter," he said, "will be the necessity of meeting, as far as possible, the problem of unemployment. As you know, the gold mining industry has rightly promised to re-employ all those of its former employees who proceeded on active service. In the great majority of cases temporary men were taken on in place of those who had enlisted. Our first duty, obviously, is to the returned soldiers formerly employed by the gold-mining industry. It goes without saying that all pledges given will be faithfully observed so long as it is humanly possible to do so, but it is clear that the services of a considerable number of men employed temporarily to fill the places of those who happily will return can no longer be utilised by the industry. It is clear, therefore, that this difficult problem has to be faced, and faced with sympathy of a practical nature. It is also clearly a problem that cannot be left on the shoulders of any one particular industry, but is one that must be tackled by the State and the community generally." Referring to the success achieved in dealing with the adjustment of industrial affairs, the President—who has himself so largely contributed to that success—mentioned the recent recognition of a principle "of the greatest importance." He said: "That principle lies within the arrangement made that no sectional or drastic action shall be taken in a dispute by either side before the question has been referred to a Board of Reference. On some occasions this understanding has not been kept, and, realising its importance, we were able to get a meeting between the various Executives of the Federated Unions and the Executive of this Chamber. At this meeting, I am happy to say, the principle to which I have just referred, and which had been previously agreed with each of the Unions, was unanimously and definitely reaffirmed." And thus, it will be seen, the year ends, in the opinion of the President of the Chamber, in a note of hope and confidence that, great as are the problems, present and prospective, of the industry, all will yet yield to the same solvents of sympathy, hard work, co-operation and moderation as in the past.

TRANSVAAL CHAMBER OF MINES QUARTERLY REPORT.

THE quarterly report of the Executive Committee of the Transvaal Chamber of Mines states:—During the three months ended 30th November, the disbursements amounted to £47,954 5s. 1d. This sum includes certain disbursements in connection with the Transvaal Miners' Phthisis Sanatorium, Wedge Farm Sanatorium, Witwatersrand University Committee, Government Miners' Training Schools, Governor-General's Fund, Central Buying Department, and Standing Committee on Dust Sampling. The receipts amounted to £52,120 13s. 3d., including refunds in connection with the disbursements already mentioned. The Chamber's current account was overdrawn on 30th November by £1,739 12s. 7d.

NATIVE LABOUR.

The returns supplied by the Witwatersrand Native Labour Association, Ltd., show the following results for the months of September, October and November, 1918. Number of natives employed by members of the Association on last day of month (including natives in the service of mine contractors, but excluding natives in the employ of members of the Association in the districts of Barberton, Breyten and Rooiberg):—

	September, 1918.	October, 1918.	November, 1918.
On Gold Mines	179,399	173,153	160,275
On Coal Mines	12,108	11,824	11,826
On Diamond Mines	4,889	4,749	4,016
	<u>196,396</u>	<u>189,726</u>	<u>176,117</u>

The Witwatersrand Native Labour Association and the Native Recruiting Corporation furnish the following information with regard to the natives recruited by the Association and its members and the Corporation during the months of September, October and November, 1918, and the districts whence they were obtained:—

	Sept., 1918.	Oct., 1918.	Nov., 1918.
East Coast—South of Lat. 22°S.	4,544	3,990	1,920
Cape Province	3,817	1,975	244
Transvaal Province	309	275	40
Basutoland and O.F.S. Province	1,311	840	103
Bechuanaland	199	63	72
Natal Province	246	166	58
Swaziland	508	354	156
Rhodesia (including via Pietersburg)	—	2	—
Local and Voluntary	10,061	8,088	3,347
	<u>20,995</u>	<u>15,753</u>	<u>5,940</u>

The monthly report issued by the Department of Native Affairs shows that at the 30th September, 1918, 283,052 coloured persons were employed in labour districts of the Transvaal. Of this number, 212,720 were engaged on mines and on the various classes of works, *i.e.*, chemical, metallurgical, brickmaking, and other works as defined in Part I. of the Coloured Labourers' Health Regulations, 1906, and 70,332 were in other employ.

GENERAL HEALTH CONDITIONS ON THE MINES.

The 21st dust sampling survey of the mines was completed during the period under review. The average dust content per cubic metre sampled was 2.6 milligrams in the 20th survey and 2.7 milligrams in the 21st survey. In addition, 7,335 dust samples taken by mine dust inspectors were analysed in the Chamber's laboratory. The reports of the surveys indicate the maintenance of the improvement in the dust conditions on the mines.

INDUSTRIAL CONDITIONS OF WHITE EMPLOYEES.

The strike of the members of the Ironmoulders' Society terminated at the beginning of December, the men returning to work upon the same standard rate as that of all other

mine mechanics, and the same war bonus according to the sliding scale agreed upon between the Chamber and the other Mechanics' Unions, the strike to constitute a breach in continuity of service for holiday leave purposes. Underground contract system: The proposed new form of agreement resulting from discussions between representatives of the South African Mine Workers' Union and the Chamber has been submitted by the South African Mine Workers' Union to a ballot of its members. The result of the ballot was not known at the close of the period under review. Board of Conciliation (Engine Drivers' and Firemen's Mutual Protection Society): A Board of Conciliation sat during the period under review on the dispute relating to the employment of certain engine drivers on the sinking of a new shaft at the Crown Mines. The Board was unable to come to a unanimous decision, and the matter was referred to the arbitration of Mr. H. O. Buckle and Mr. T. G. Macfie. The award of the arbitrators had not been made at the close of the period under review. Boards of Reference: The following Boards of Reference sat during the period under review:—D. Opperman—Crown Mines; F. W. Lippiatt—Crown Mines; E.R.P.M.—Cutting of prices, etc.

Sir Evelyn A. Wallers, K.B.E.: The Executive Committee has much pleasure in reporting that His Majesty the King has been pleased to confer on the President of the Chamber the honour of Knighthood of the Order of the British Empire.

Armistice celebrations: The day following the signing of the armistice, namely, Tuesday, November 12th, was declared a public holiday, and the same facilities were granted to both European and native employees on the mines as are granted on Christmas Day and Good Friday. On the occasion of the official celebration of the signing of the armistice in Johannesburg on December 11th, returned soldiers, both Europeans and natives, employed on the mines, were granted similar facilities.

Bravery of mine employees: The Chamber's medal for bravery was presented to the widow of the late G. S. Pretorius, in recognition of an act of bravery of her late husband in a gassing accident at the Bantjes Consolidated Mines, Ltd., by which he lost his life. With the medal was presented a gold locket and chain for his posthumous daughter.

Membership: The following companies have been admitted to membership of the Chamber, as from 1st January, 1919:—Messina (Transvaal) Development Co., Ltd.; New State Areas, Ltd.; The African and European Investment Co., Ltd. The following withdrawals from membership of the Chamber, as from 31st December, 1918, have been notified: Henderson Consolidated Corporation, Ltd.; Durban Roodepoort Gold Mining Co., Ltd.; The Sheba Gold Mining Co., Ltd.; Glencairn Main Reef G.M. Co., Ltd.; Bantjes Consolidated Mines, Ltd. The appointment of the following representative has been noted: West Springs, Ltd.—Mr. Sydney E. T. Ewing. The following changes in representation have been noted: City and Suburban G.M. and Estate Co., Ltd.—Mr. H. C. Hilton, *vice* Mr. C. Glyn; East Rand Proprietary Mines, Ltd.—Mr. F. C. Dumat, *vice* Mr. W. J. Gau.

Gold output: The output of gold for the Transvaal for the months of September, October and November, 1918, has been declared as follows: September, 1918, 708,206 fine ozs., valued at £3,008,267; October, 1918, 679,764 fine ozs., valued at £2,887,455; November, 1918, 658,701 fine ozs., valued at £2,797,983.

Mr. A. E. du Pasquier, Manager for South Africa for the British Westinghouse Electric and Manufacturing Co., Ltd., leaves Johannesburg this week on a visit to England. Mr. Du Pasquier's visit will be a short one in view of his having been elected President of the South African Institute of Electrical Engineers for the coming year.

Released from Admiralty Control

DELTA METAL

The Delta Metal Company, Limited, East Greenwich, have cabled that they are again open to receive orders for South Africa.

SOLE AGENT:

TEL. NO. 5892.

H. ALERS HANKEY,

P.O. BOX 3807.

STANDARD BANK CHAMBERS, JOHANNESBURG.

Rhodesian Section.

RHODESIAN MINERAL OUTPUT IN DETAIL.

WE have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of October, 1918, with comparisons and values:—

MATABELELAND.

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
BULAWAYO DISTRICT.				
A. D. C. (Lochade Synd.), Sept.	5	600	51.00	211
Allee (R. J. Howe)	2	220	31.52	131
Annasona (Rhodesia, Ltd.) ...	3 1P	195	287.90	1194
Do. (sands)	—	294	80.13	332
Antelope G.M. (Rhod.) Co. ...	2BM 1T 2P	2700	570.30	2419
Do. (sands)	—	2484	587.80	2497
Balmoral (W. Arbery)	5	800	143.81	596
Bapaume (A. W. Wilson)	3	95	88.35	366
Big Ben South (W. E. Hunt) ...	2	70	31.05	129
Bushtick Mines, Ltd.	8N 3T 15	3940		
Do. (sands)	—	2040		
Do. (slimes)	—	1744	567.50	2353
Do. (concentrates)	—	156		
Camp (Carson Mines, Ltd.) ...	5 1P	549	27.79	115
Do. (sands)	—	420	84.18	349
Celtic (Trans. & Rhod. Estates) ..	(10) (2P)	500	110.00	456
Do. (sands)	—	500	40.00	166
Confidence (A. D. Hall)	5	301	55.57	230
Eagle Hawk (T. Berwitz)	5	300	102.19	424
Fred (Trans. & Rhod. Estates, Ltd.)	10 2P	1300	851.69	3531
Do. (sands)	—	1300	288.49	1196
Germania (A. G. Haddingham) ...	2N 2P	782	663.14	2749
Do. (copper blister)	F	—	13.51	55
Jessie (Jessie Tributators)	10 1P	654	191.63	795
Do. (sands)	—	790	40.08	166
Jumpers (J. P. McCay)	5	170	64.36	267
Do. (sands)	—	—	32.41	134
Lonely Reef G.M. Co.	20 3T	2665	825.05	3420
Do. (sands)	—	2665	1732.15	7181
Mali (E. C. Smythe), September	3	96	10.94	45
Do. October clean up	—	—	26.40	109
Marlish (C. A. Abbot)	2	48	6.12	25
Matabele Queen's Co., Ltd.	10 2P	930	198.24	822
Do. (sands)	—	930	90.70	376
Moreton Pinkney (J. Robinson) ..	2	216	40.81	169
New Eclipse (J. R. Stewart) ...	5 1T	680	197.66	819
Newtonfontein (A. H. Newton) ...	3	300	128.58	533
Do. (sands)	—	140	45.60	189
Petrel (E. Warren)	5	175	22.54	93
Red Rose (F. C. Barrett)	10	295	299.17	1240
Rhodesian Queen (Gilpin and Pickles), September	5	25	16.67	69
Sabi (Fletcher & Williamson) ...	15	1260	154.67	641
Do. (sands)	—	879	119.02	494
Star (Eastern Queen) Romola Nigel G.M. Co. (sands)	—	175	27.23	113
Wit Boy (Wit Boy Synd.)	5	149	68.74	285
Do. (sands)	—	230	19.61	82
Bulawayo District Total ...			9,034.34	37,562

GWELO DISTRICT.

Acacia (M. & G. Hogg)	2	110	41.03	170
Ardpatrick (B. Fray)	3	86	62.00	257
Babs (Beach & Boly)	H	240	188.26	780
Bonsor B323 (C. Brunton), clean up, August	F	—	1.55	6
Chimborazo (Wonderland Trib. Syn.)	5 1P	140	56.68	135
Do. (sands)	—	150	31.64	132
Commonage (H. W. Gray)	1T	238	14.03	58
Connemara (Connemara Synd.) ...	20	1813	54.02	186
Do. (sands)	—	1326	295.21	1224
Do. (slimes)	—	487	140.77	583
Conqueror (Leppington & McConkey)	5	200	107.57	446
Danga (Wonderland Trib. Synd.)	5 1P	100	41.30	171
Emerald (F. M. Linscott), Sept. .	5	575	86.01	356
Falcon Mines, Ltd.	26N 2T	4067	225.58	948
(Copper and Silver values not given.)				
Fed Up (A. Malcolm)	5	148	133.26	553
Gaika G.M. Co., Ltd.	1C 1T 5	2130	549.89	2332
Do. (sands)	—	2435	297.17	1262
Glen Arrock (Glen Arrock Synd.), September	(5)	120	43.65	181
Do. October	5	100	82.76	343

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Globe & Phoenix G.M. Co., Ltd.	40 12P	2910	3198.98	13436
Moss (James & Worthington) ...	5	450	142.09	589
Nevada G (F. C. Luxat)	1 H 5	960	116.97	485
Roseate (W. J. Wright), September	2	75	11.19	46
Rossie (C. Brunton), clean up ...	—	—	2.87	12
Royalist (J. Austen)	5	250	89.58	371
Rutland (H. K. Havuar)	2	72	49.12	204
Sheba B125 (C. Brunton), clean up, August	F	—	48.89	196
Tabekwe (A. N. Tyrell), sands ...	—	600	33.51	139
Do. (T. Kerr), clean up (sands)	—	55		
Do. (sluices)	—	2	32.16	133
Veracity (L. R. Evans)	5	650	117.01	485
Do. (sands)	—	650	45.43	188
Walrus (J. Jones), September ...	5	300	57.24	237
Wanderer (Selukwe) G.M., Ltd. ...	4GR	11590	818.96	3395
Zabonkwe (Holmes & Urquhart) .	5	840		
Do. (sands)	—	550	170.47	707
Do. (slimes)	—	290		

Gwelo District total 7,378.15 30,746

MASHONALAND.

HARTLEY DISTRICT.

Acorn (Anzac Synd.)	5	230	70.46	292
Do. (sands)	—	210	36.64	152
Birdie 2 (A. Olsen)	2	47	29.10	121
Cam & Motor G.M. Co., Ltd. ...	RP	5510	2036.19	8676
Do. (accumulated slimes)	—	2079	187.02	793
Dahney 1 W (McDonald & Sale), September & October, slimes	—	1100	97.84	406
Eiffel Blue (Willoughby's Con. Co., Ltd.)	10	975	326.86	1355
Do. (sands)	—	600	40.11	166
Enney Ext. (E. G. Goodyer)	5	220	146.48	607
Do. (sands)	—	220	43.61	181
Frog (C. Somerset)	2	198	28.82	119
Golden Valley (John Mack & Co.)	10 1P	802	192.96	800
Do. (sands)	—	462		
Do. (slimes)	—	510	233.32	967
Hervine (A. E. Ward), slags ...	F	—	13.17	53
Horseshoe (C. E. F. Hussey)	2	50	50.99	211
Kim (R. S. Milne), September ...	5	77	27.38	113
Lily 1 (Lily Synd.)	2	50	13.30	55
Owl (A. Rolfe)	10	875	156.34	648
Do. (sands)	—	823		
Do. (slimes)	—	498	200.94	833
Owl Extension (Cribb & Seear) ...	10	833	115.91	480
Do. (sands)	—	725	78.85	327
Pomposo (J. Knott)	2N	271	22.91	95
Princess Royal (Mrs. Sarah Smith), September	3	30	14.62	61
Rouge (Dreadnought Synd.), slimes	—	400	28.08	116
Shepherds (Begbie & Jackson), Sept.	—	690	150.07	622
Do. (sands)	—	800	162.84	675
St. Louis (A. J. Van Breda)	2	35	19.54	81
Tiger (Clark & Blackburn), Sept. .	5	240	35.36	147
Tsessebe E. Ext. (Ulyett & Seear)	5	490	202.19	838
Do. (sands)	—	414	53.15	221

Hartley District Total 4,815.05 20,211

LOMAGUNDI DISTRICT.

Alluvial (2 producers)	—	—	11.39	47
Angwa (F. L. Standen)	5	694	76.49	317
Anglian (Schapke & Quarrie) ...	5	247	53.75	223
Crescent (Crescent Synd.)	—	59	6.02	24
Eldorado Bkt. G.M. Co., Ltd. ...	20 2C	4045	1651.00	6999
Do. (sands)	—	2432		
Do. (slimes)	—	2424	701.75	2977
Eureka (F. K. Brown)	5	95	11.15	46
Gloria (H. H. Tallantire)	5	220	34.30	142
Maggiemac (J. McMurdon)	5	410	87.73	364
Do. (sands)	—	350	53.31	221
Mediterraneo (J. Perhat), clean up and panning	—	—	12.36	51
Silverside (Silverside Synd.)	F	14	—	—

Lomagundi District Total 2,699.25 11,411

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
MAZOE DISTRICT.				
Jumbo 1NW (N. Irvine)	5	99	32.29	134
Do. (sands)	—	108	16.99	70
Firefly (C. Laland)	3	78	25.02	104
Kimberley (J. Rutter), September	(5)	480	81.61	338
Do. October	5	311	60.66	252
Maori Chief (D. McLean)	5	208	52.14	216
Micky (Micky Synd.), clean up ...	—	—	17.65	73
Rosa (R. Aserman), September ...	C	1574	58.40	242
Rothschild (Cunningham & Allison)	10	430	204.87	849
Victory (G. C. N. Sonthey)	2	20	6.57	27
Mazoe District Total			556.20	2,305

SALISBURY DISTRICT.				
Beatrice (New Beatrice G.M. Co., Ltd., sands	—	330	14.42	60
Do. (J. Kerr), slags	—	F	64.34	257
Cross Your Luck (W. A. Hoole)	5	232	29.79	123
Joking & Euchred (Harrison & Drabble)	8	1050	354.14	1468
Do. (sands)	—	456	36.21	150
Joyce (Ellsmoor & Wyper)	5	458	79.89	331
Left Bower (B. G. Byerley)	5	278	211.72	878
Mollie A. (Mollie A. Synd.)	5	60	25.09	104
Mont D'Or (C. N. Buller)	5	111	96.16	399
Radnor (L. Hyland), sands	—	450	24.04	100
Shamva Mines, Ltd. 56N 10T	22053	1471.24	6238	
Do. (sands)	—	10907		
Do. (slimes)	—	10965	1919.95	8141
Trio (Trio Synd.)	5	324	184.60	765
Salisbury District Total			4,511.59	19,014

UMTALI DISTRICT.				
Bessie S. E. (J. Buchanan), adjustments, May-Dec., 1917, and Feb., 1918	—	—	7.01	216
Liverpool (R. G. Snodgrass)	5	820	138.43	574
Do. (sands)	—	420	146.55	608
Liverpool A (Meikle & Davis), September	(5)	736	83.42	346
Do. October	5	544	50.25	208
Do. (sands)	—	510		
Do. (slimes)	—	240	38.26	159
Lucknow D.B.I.E., September ...	2N	430	65.62	272
Do. (sands)	—	130	28.81	94
Rezende Mines, Ltd.	40	5200	1746.67	7411
Do. (sands)	—	3348	380.59	1615
Do. (slimes)	—	1180	237.16	1006
Do. (concentrates)	—	123	492.05	2087
Umtali District Total			3,408.82	14,596

VICTORIA DISTRICT.				
Cotopaxi (T. Morris & W. Hamilton)	2	25	10.22	43
Count (C. D. Currie)	2	80	19.85	82
Empress (S.A. Pros. & Con. Synd.)	8	1200	122.59	508
Do. (sands)	—	750	72.90	302
Victoria District Total			225.56	935

(P) Grinding Pan, (BM) Ball Mill, (T) Tube Mill, (H) Huntington Mill, (GR) Gates Rolls, (B) Ball Mill, (Pn) Pneumatic Stamp, (N) Nissen Stamp, (C) Chilian Mill, (RP) Roasting Plant, (F) Treated at Falcon Mine, (WM) Waterfall Mill, (LM) Lane Mill.

SUMMARY OF PRODUCTION, OCTOBER, 1918.	
Gold, 32,628.96 ozs.	£136,780
Silver, 6,928.58 ozs.	1,980
Base Minerals and Precious Stones	37,018
	£175,778
GRAND TOTALS GOLD AND OTHER METALS AND MINERALS AND PRECIOUS STONES—OUTPUT TO DATE.	
Gold, 10,488,140 ozs.	£42,389,964
Silver, 2,614,161 ozs.	295,149
Base Minerals and Precious Stones	5,086,016
Grand Total value of Mineral Production to date	£47,771,129

GEORGE ELLISON

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ELECTRICAL CONTROL GEAR

WITHDRAWAL.

An article appeared in *The South African Mining Journal* on 23rd November, 1918, entitled "The Mining District of Heidelberg," written by Mr. John Moffat. Mr. W. Bleloch has notified us that he regards certain portions of the article as containing derogatory reflections upon himself. We take this opportunity to state that in publishing the article in question we intended to cast no reflection upon Mr. Bleloch, and we therefore dissociate ourselves from the statements to which he takes exception and express our regret to him for having given publicity to them.

This notice of withdrawal is published on behalf of the following parties:—

Mr. S. R. Potter, in his capacity as the editor of *The South African Mining Journal*;

The South African Mining Journal Syndicate, Limited, the proprietors of *The South African Mining Journal*;

The Argus Printing and Publishing Company, Limited, printers of *The South African Mining Journal*; and

The Central News Agency, Limited, the publishers of *The South African Mining Journal*.

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Workmen
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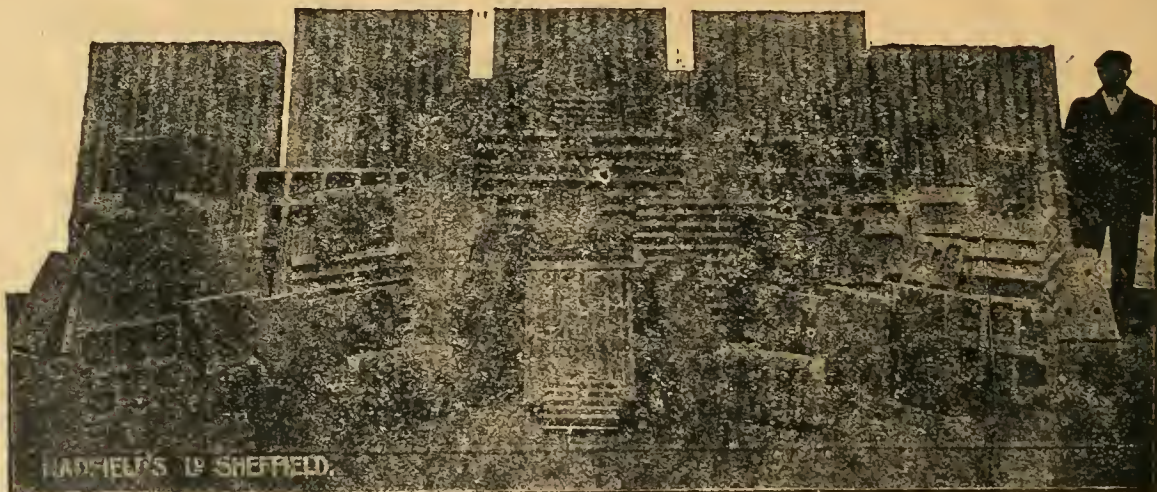
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Trade With Germans.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—I notice that in last week's issue of your paper you deal with the speech made by Mr. F. C. Sturrock at the meeting of the Johannesburg Chamber of Commerce with reference to the future dealings and trading with the Germans—I presume this also covers the other enemy nations composing the Central Powers. I quite agree with the remarks that Germany should be punished for her wrong-doing and that we should have as little to do as possible with an aggressive and ill-disposed neighbour, and it certainly would be contrary to the best interests of the Empire to revert to pre-war conditions in regard to trading with the enemy nations. I have returned from France and have had opportunities of seeing some of the released and tortured soldiers, and I maintain that it is the duty of every member of the British Empire not only to make himself acquainted with Hun crimes but to remember them and place the enemy nations in coventry for a number of years and only to consider trading with them after they show signs of becoming civilised and repentant. We should also remember that there is a thing called International Law which forbids the torture and ill-treatment of prisoners of war and also forbids employing them upon military works under fire. The enemy nations signed pledges to observe these laws, but they chose to adopt a policy of brute force and proclaimed that no such laws or pledges would be binding upon a nation which felt itself strong enough to disregard them. Now we all know that the captured privates and non-commissioned officers of the Allies have been put to forced labour in German trenches under the fire of French, American and British guns. They have been beaten, murdered and starved, they have perished with cold, they have been herded together like swine, some of them were forbidden to let their relations know they were alive and have been treated with every cruelty that the ingenuity of their savage taskmasters could devise. Some of us have seen, others have read of men, or poor things that once were men, gaunt skeletons, covered with lice and sores, wearing the rags of the clothes in which they had been captured months if not years before, and which had never left their bodies, stumbling back into the French and British lines to tell the tale of their awful martyrdom. We have had described to us, by those who were captured, that men were crammed 110 in a room 20 feet by 15 feet, insufficiently ventilated, in other words men, subjected to slow murder, of men lying under roofs through which rain poured down, or in shelters in which the wet clothes froze at night upon their emaciated bodies. There was one man reported to weigh 13 stone before capture and returned weighing a little more than 8 stone. We have heard of men, of starving men, being shot down for falling out of the line to pick up a crust of bread. We have been told by eye-witnesses of compassionate Frenchwomen being struck down by Hun sentries for trying to pass a bit of their scanty food to the unhappy British victims. Some of your readers must have heard of a certain prison camp whence were returned from the front trenches the wrecks of humanity who had become too weak to be usefully tortured further. It is said that the Camp Commandant gave orders that his victims were to be led through the byways of the town because their passage through the main streets would have evoked the

pity and possibly the tears of the inhabitants. Now let us remember that all these unlawful acts were done in obedience to the Prussian spirit. We took up arms that the accursed thing, which has brought black shame upon the whole white race, may be beaten down into the mire from which it arose. The coloured races of South Africa, whether they chose to believe or not, have been told by the natives employed in both German South-West and German East of the awful treatment meted out to the aborigines of those colonies, and many have been known to say that the Kafirs of South Africa would never descend to commit such acts of barbarity. Those who have been to France and seen the German prisoners employed by both French and British can witness and verify my statement that they were treated with kindness and justice. In the camp I was in there were some ten to fifteen thousand German prisoners of war, and I positively swear that these were treated exactly the same as the British soldier prisoners or even the Labour Corps men were treated. They had the same hours to work and the same sort of huts to live in. Before we talk of trading again with the Huns, the Austrians, or the Turks, let us remember and realise how petty in comparison are the sacrifices which we ourselves have made in South Africa, far away from the seat of war, to what these soldier-martyrs have suffered. Let these men say when they think we should trade again, or when they think the Hun has become repentant.—Yours, etc.,

C. D. W.

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Successful Start of British Diamond Cutting Industry.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—In your paper dated 7th inst. you publish Mr. B. Oppenheimer's big scheme to train disabled soldiers in the art of diamond cutting, and then you go on to tell us that this gentleman says he has actually started a British diamond cutting factory in Brighton. Mr. Oppenheimer says "that some of the men were able to earn as much as £5 per week and that their cutting has been found perfect by the severest critics." My object in writing a few lines to you is simply to satisfy my curiosity and to enquire why it is that Mr. Oppenheimer did not start the diamond cutting factory at the Richmond Hospital where there are so many disabled and legless South Africans? I distinctly remember when I was invalided from France to the South African Hospital in Richmond Park being told that someone had offered to erect all the necessary machinery and plant so that the disabled South African soldiers might be instructed in the art of diamond cutting and polishing. We were subsequently informed that, for some reason, certain members of the committee had protested against the industry being started at the South African Hospital. It was hinted that these members of the committee were influential and prominent men interested in the S.A. Diamond Corporation.

Now, Sir, if Mr. B. Oppenheimer is in South Africa, would it be asking you too much to endeavour to get him to tell us who was the man who first offered to start the industry at the Richmond Hospital, and secondly, who were the people who so successfully and strenuously opposed the offer? We all applaud Mr. Oppenheimer's action in establishing this industry in England—more power to his elbow—but we cannot understand what possible objection there could be to teaching the young and legless South African soldier how to cut diamonds. Later on, when

they had become proficient the industry could have been removed to South Africa, where industries are badly needed, and employment given to thousands of men and women who live in the country where probably ninety per cent. of the diamonds of the world come from. Mr. Oppenheimer says he is arranging centres of instruction at Cambridge, Wrexham and Fort William. I, like many others, wonder why not at Kimberley, Pretoria and, say, Bloemfontein. One industry is often the means of others starting. For instance, instead of sending the rough diamond to England to be cut and then back again to South Africa when cut, the diamonds might be cut here, save transport expenses, and no doubt a large jewellery factory would be started here to set the diamonds for the South African trade.—Yours, etc.,

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Barberton,

December 23, 1918.

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—your next inquiry?

Bartles

THE WEEK IN THE SHAREMARKET.

An Unsatisfactory Week—Fall in Modder East.

On Friday morning the market was quiet and practically unchanged, though the tendency was towards lower prices, as in the case of Government Areas. Springs lost no more ground. Rand Selections were firm and Pretoria Cements weak. The average of prices at Saturday's call was about the same. The three big Modder stocks were harder and the Modder East lot lower. Government Areas probably for the first time on record were passed without a quotation. In the course of the morning someone got annoyed with Modder East and banged them down to 18s. 6d., but being left alone the game finished without a sale at the price. Immediately afterwards they came buyers at the same figure. The four-year-old options touched bottom with a sale at 5s. 11d. On Monday morning the only strength was shown by New Modders and Dagga Mines. Modder East were done at Saturday's closing price and the options had a further fall. The report of the meeting does not seem to have been appreciated by holders or prospective buyers. Before lunch Daggafonteins made a further advance to 24s. 6d. Modder East were actively dealt in during the afternoon and closed at 18s. 5d. Tuesday was a holiday market with very little disposition to deal. Only a dozen stocks changed hands. Government Areas were better, and just after the call a sale was put through at 92s. Modder East fell to 18s. and the options were unquoted. Brakpans came 70s. sellers without a buying offer. The following stocks improved towards the close with sales of New Modders at £26 10s. and £26 12s. 6d.; Modder Deeps, £7 13s.; South Van Ryns, 13s. 6d.; Springs, 67s.; Leeuwpoots, 24s. 6d.

After the two days' holiday there was a tired, next morning, tone about the House. Prices were not materially altered, neither was business any brisker. The following changes took place. Sales:—Government Areas, 92s. and buyers; Leeuwpoot, 25s. and buyers; Lace Props, 10s. 6d. and sellers; Meyer and Charlton, 93s. 9d.; Modder East, 17s. 9d.; New States, 17s. 9d.; New Modders, £26 12s. 6d.; Randfontein Deep, 5s.; West Springs, 23s. 3d. Buyers and Sellers Consolidated Langlaagte, 18s. 3d. to 19s.; Modder B, £7 13s. 6d. to £7 17s. 6d.; Modder Deep, £7 11s. 6d. to £7 14s.; Alkali, 36s. 6d. to 40s.; T.G.M. Estates, 13s. to 13s. 6d. The record for the last two months in the way of actual business is the worst since the Stock Exchange has been reopened and the general disappointment at the fall in Modder East, largely held by the public, has not improved the situation. No one seems inclined to foretell a speedy recovery.

	Thur., 19th.	Fri., 20th.	Sat., 21st.	Mon., 23rd.	Tues., 24th.
African Farms ...	15 3*	15 3	15 3*	15 0*	15 4
Anglo-Amer. Corp. ...	30 9†	31 0	32 0†	—	27 6*
Apex Mines ...	7 9	—	—	7 3*	7 9†
Aurora Wests ...	8 6*	8 6*	8 6*	—	8 6*
Bantjes Consolidated ...	2 2	2 3*	2 3*	2 3*	2 3*
Brakpan Mines ...	—	69 6*	—	71 6†	70 0†
Breyten Collieries ...	12 0	11 6*	12 0*	11 6*	11 6*
Brick & Potteries ...	3 9*	3 9*	3 9*	3 9*	4 0*
British South Africa ...	20 0*	20 0*	20 0*	20 0*	20 6*
Bushveld Tins ...	0 6*	0 8*	0 8*	0 8*	0 8*
Cassell Coals ...	—	38 6†	—	—	—
Cinderella Cons. ...	—	5 0*	—	—	5 0*
City and Suburbans ...	7 6*	7 6*	7 9*	7 9*	7 9*
City Deeps ...	46 6*	46 6*	46 0*	46 0*	46 0
Clydesdale Collieries ...	22 0*	22 0*	22 6*	22 6*	22 6*
Con. Investments ...	21 0*	—	—	—	—
Con. Langlaagtes ...	17 6*	18 0*	18 0*	18 3*	18 6*
Con. Main Reefs ...	11 6*	11 6	11 6*	11 7*	11 6*
Con. Mines Selection ...	23 6*	23 9*	25 0†	24 0*	24 0*
Coronation Collieries ...	50 0*	—	—	—	—
Coronation Freeholds ...	1 3*	1 3*	1 3*	1 3*	1 3*
Crown Diamonds ...	—	—	—	3 0*	3 0*
Crown Mines Deb. ...	£100*	£100*	£100*	£100*	£100*
Daggafontein Mines ...	22 9*	22 9*	22 9*	24 0	24 0*
Do. Options ...	5 3†	5 1	5 6†	6 0	6 3†
East Rand Coals ...	2 3*	2 3*	2 3*	2 3*	2 3
East Rand Deeps ...	0 11*	0 11*	1 0*	1 0*	1 0*
E.R. Minings ...	—	17 0*	—	—	—
East Rand Props. ...	5 0*	5 3*	5 3*	5 6*	5 6
East Rand Debentures ...	£65*	£67*	£67*	£68*	£68*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Thur., 19th.	Fri., 20th.	Sat., 21st.	Mon., 23rd.	Tues., 24th.
Eastern Golds ...	1 3*	1 3*	1 3*	1 3*	1 3*
Frank Smith Diamonds ...	—	3 5*	3 9†	3 6*	3 6†
Geduld Props. ...	37 9	37 9*	37 9*	37 9*	—
Glencoe Collieries ...	—	—	—	6 0*	6 0*
Glynn's Lydenburgs ...	24 0*	24 6*	24 6*	24 6*	24 6*
Government Areas ...	91 9*	91 0	—	90 9*	91 9*
J'burg Board of Executors ...	—	28 0*	—	—	—
Jupiters ...	4 9*	4 10	4 9*	4 9*	4 9*
Klerksdorp Props. ...	3 0*	3 0*	—	—	3 0*
Knight Centrals ...	6 4*	6 3*	6 4*	6 3	5 9*
Knights Deeps ...	10 6*	—	—	—	—
Lace Props. ...	—	10 6*	10 7	10 6*	10 6*
Leeuwpoot Tins ...	25 0*	23 6*	23 9*	24 0*	24 0
Lydenburg Farms ...	8 8*	8 6*	8 7	8 7	8 8*
Modder B.'s ...	157 0†	152 6*	152 6*	152 6*	153 0*
Modder Deep ...	151 0*	151 6*	152 0*	151 0*	152 0*
Modder Easts ...	19 9	19 6	19 3	18 6	18 0
Do. Options (3 yrs.) ...	5 1*	5 0	—	—	—
Do. Options (4 yrs.) ...	6 3	6 0	—	5 0*	—
Hume Pipes ...	29 0	29 0	28 6*	29 6†	27 6*
De Beers Pref. ...	£144*	£144*	£144*	—	—
De Beers Def. ...	—	—	£15*	—	—
Natal Navigation Col. ...	—	—	20 6*	21 0*	21 0*
National Banks ...	£114*	—	—	£143*	£143*
New Boksburgs ...	1 0*	1 0*	1 0*	1 1*	1 0*
New Eland Diamonds ...	24 0*	24 0*	25 0	23 9*	25 0†
New Era Cons. ...	10 0*	10 1*	—	10 6	10 6*
New Geduld Deeps ...	5 9*	5 9*	5 9*	5 9*	5 9*
New Heriots ...	—	12 6*	12 6*	12 6*	12 6*
New Kleinfonteins ...	13 0†	11 3	11 3*	11 0*	10 9*
New Modderfontein ...	£26½	£26½	£26½	£26½*	£26½*
New Unifeds ...	—	—	—	6 0†	—
Nigels ...	—	4 0*	4 0*	4 0*	4 0*
Nourse Mines ...	16 0*	16 0*	—	16 0*	—
Pretoria Cements ...	63 9	60 0*	60 0*	60 0*	61 0
Princess Estates ...	2 3*	2 6	2 5*	2 5*	2 4*
Rand Collieries ...	3 6†	3 1*	3 0*	3 0*	—
Rand Nucleus ...	1 9*	—	1 10*	2 0†	1 10
Rand Select. Corp. ...	83 6*	84 0*	—	84 0*	87 6†
Randfontein Deeps ...	4 9*	4 9*	4 9*	4 9	5 0†
Randfontein Est. ...	13 6*	—	—	13 9*	—
Rooibergs ...	7 6	7 4*	7 6*	7 9*	7 9
Roodoport Uniteds ...	—	2 9†	2 0*	—	—
Ryan Nigels ...	3 0*	3 6†	—	3 3†	3 0*
Shebas ...	1 9†	1 6*	1 6*	1 6*	—
Simmer & Jacks ...	—	—	6 0†	—	—
Simmer Deeps ...	2 9†	2 9†	2 9†	2 0*	2 6†
S.A. Breweries ...	33 6†	—	34 0†	—	33 0†
S.A. Lands ...	—	6 2	6 2	6 1*	6 3
Springs Mines ...	66 6	66 3*	66 6	66 3	66 6
Sub Nigels ...	27 3*	27 6*	27 6*	28 0	27 3*
Swaziland Tins ...	—	30 0†	30 0†	29 0†	—
Transvaal Lands ...	22 6*	23 0*	23 0*	24 0	—
Trans. G.M. Est. ...	12 6*	12 6*	12 6*	12 6*	12 6*
Van Ryn Deeps ...	70 9*	70 9*	70 6*	70 9†	70 6*
Village Deeps ...	15 0*	16 0*	16 0*	16 0*	—
Western Rand Estates ...	—	—	2 0*	2 0*	2 0*
Witwatersrands ...	19 0*	19 0*	19 6*	—	—
Witwatersrand Deeps ...	13 3*	13 9	13 9*	14 0	13 9*
Woluhuts ...	3 3*	3 3*	3 3*	3 3*	3 3*
Zaaiplaats Tins ...	15 9	15 3*	15 1*	15 3	15 0
Union 5 per cent. ...	£102½†	£102*	£102½*	£102*	£102½†
New States ...	20 3*	20 3*	20 0*	20 0*	20 0*
S.A. Alkali ...	40 0†	40 0†	35 0*	35 0*	36 0*
South Van Ryn ...	12 0*	12 9	13 3	13 6*	13 0*
West Springs ...	23 0*	22 9*	23 9	23 0*	23 0*
Do. Options ...	—	9 0*	—	—	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.



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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Chief Buying Office Closing—Merchants Carrying Instead of Mines—The Shipping Position—The Future—Restrictions Being Removed.

THE most important official information available is that the chief buying office is closing down at the end of January, when Mr. H. R. Nethersole will resume his duties as buyer of the Rand Mines group. A couple of the clerks will be kept at his office at the Corner House for the purpose of clearing up any details left over. For example, there are quantities of belated materials to come from America and Britain for merchants who obtained the orders for the various mines through the chief buying office. When these arrive they will be handed over, as now, to the merchants for delivery to the mines. This chief buying office was a bold innovation, when many other bold things were attempted. However, so far as we are concerned it has worked with very little friction because when the patriotic merchants recognised the paramount importance of such a scheme they fell into line almost with one accord, and it was a big thing to request the merchants to specify every item of essential mining machinery and stores they had in stock, as well as under order from overseas. The point now arises as to whether they cannot obtain some compensation for their loyalty, in the shape of official information as to what the mines have now on hand, so that their overseas indents can be arranged accordingly. This would place everyone on the same footing and on the whole would be very much appreciated. The fact that we know when the chief buying office is closing is lifting a great tension off the mining material world on the Rand, as there

was not that freedom of dealing as under normal conditions when the several group buyers dealt with their own requirements. Of course, the other side to the question is that we are now entering a period when the merchants will be carrying stocks instead of the mines. This will disturb the financial aspect of affairs, because in twelve months' time the balance sheets at the end of 1920 may only show about £10,000 stores as compared with £100,000 for the principal mines and also others in proportion. Hence instead of a super-abundance of money in Johannesburg, this will be one of the items to reckon with in decreasing our surplus trade funds. With the eating up of the reserve stores on the mines and the transference from the mine carrying to the merchants' ledgers, we must of necessity be in for an anxious time, more particularly for the speculative element.

THE SHIPPING POSITION.

The shipping position is likely to become, even in the immediate future, much freer for South Africa. No very special information could be had from the shipping offices during the holidays, but a favourable impression was conveyed. On that day a Reuter's message appeared as follows: London, Friday.—In a memorandum on the world's shipping published by Lloyd's and the Admiralty, Sir James Glenny Wilson argues that within a few months the supply of shipping for commerce will be greater than the demand as compared with the pre-war relationship, and that freights will fall to a level not much more than double the rates current before the war.

These notes have always supported that optimistic view, because of the absence of the submarine menace, coupled with the fact that America and England are rushing their outputs from their ship yards. It must also be remembered that practically no troops are being conveyed overseas, no guns or ammunition; in fact, Europe is pretty much at a standstill in its requirements for shipping; therefore it is not surprising that there is a better chance for South

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Africa, as expressed in the first paragraph. In any case the shipping required by the troops will be only gradual, as, at all events, the American army seems to be in for a fairly long sojourn in Europe. The Allies are asking from Germany for 2½ million tons of cargo space. Now this is not a question of taking it, but simply one of using those ships lying idle in German ports to be utilized under the pooling arrangements of the Allies. Naturally some of those ships, and perhaps a good proportion, will be required for supplying the Central Powers with foodstuffs, therefore there should be no great question arising as to the Germans falling in with Marshal Foch's demand.

THE FUTURE.

The President of the Chamber of Mines, Sir E. A. Wallers, could have given a less promising report of the gold industry, but perhaps he cannot be blamed for that, because if Johannesburg is not optimistic it is in a very poor way indeed. There seems a chance of obtaining relief from the Bank of England or Imperial authorities for the lower-grade mines. The bad factors are excessive taxation, high cost of stores, and the dearth of natives, chiefly in consequence of the 'flu, also the increased bonus on account of the higher cost of living. The best understanding of the year—nay, the war period—is that of capital and labour, between whom there is a better feeling; a little more here perhaps, and a little less there, but it is on the better side. The Boards of Reference and Conciliation have brought this about. The chief principle lies within the arrangement that no sectional or drastic action should be taken in a dispute by either side before the question has been referred to a Board of Reference and that Board under the present machinery can be put into existence promptly. We may still have strikes or even lock-outs, but these should not happen until all constitutional methods are exhausted. It almost seems a pity that the great coal mines of the Union are not dealt with in a similar manner as the gold mines, as those are a good second string to our bow. Hence with the gold mines, and the coal industry, also factories (other than agriculture and mining) numbering 4,050, employing 99,000 people, producing £40,000,000 from raw materials, South Africa must have a splendid future. Then there is the land required for ranching purposes, also the fact that there must be a great increase in people who will be coming here, primarily for our gold and diamonds, from all parts of the universe. They will bring a certain amount of capital and what is equally as good, their enterprise and activity for agricultural, mining and manufacturing. However, do not forget that the future will contain strenuous times because of the influx of the newcomers and the world's manufactures being poured into our limited markets. The present merchants, be they wholesalers or retailers, will have to look to their laurels to hold their own, to say nothing of forging ahead, as we have had

easy times during the war both for trading and financial matters. Financial matters may still go easy with us owing to the heavy income tax in Britain sending money to South Africa for investment. Trading cannot be so easy, as the gold and diamonds have given us such a wonderful advertisement and the people in the more crowded portions will be attracted to Johannesburg to try their luck. However, these newcomers might not do the older traders much harm providing they understand that after all ours are limited markets and not London or Chicago.

RESTRICTIONS REMOVED.

It is very pleasant to record the American Consul's report that the restrictions on the imports of asbestos, corundum and corundum grains into the United States have been removed. Pretoria also advises that in regard to imports from the United Kingdom the Imperial authorities are now prepared to issue export licences freely, and that application for priority assistance need no longer be made to local priority committees. The same procedure also applies in respect of orders from the United States, the arrangements for placing orders with the British War Mission having been terminated. Provision is also made for expediting the execution of orders of vital or national importance. It will, however, still be necessary to apply direct to the Deputy Controller of Imports and Exports, Pretoria, for shipping facilities from North America, Australia and India. These indications show in every instance that the war restrictions are being removed, and as they have started so briskly, it can be safely said that in a month or so after peace is signed all the real difficulties will be removed.

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BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 10s. bag; 9s. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 60s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £45 per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 9s. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled, 14s. to 15s. Imperial gallon; white lead, 1s. 6d. per lb. and 1s. 2d. in big lots; turpentine, 85s. 2/4 15 galls.; 10—1's; 5-6 imp. tins, 100s.; oxide in oil, 9d. per lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ¼in., 8s.; do., mirror, 9s.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; 21oz., 3s. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £40; local, £33 to £33½ per ton; tallow (local), 8½d. per lb.; paraffin, 24s. per case of two 4's; petrol, 39s. 7d. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 38s. 6d. to 47s. 6d. per case; cylinder, 38s. 6d. to 47s. 6d.

CHEMICALS.—Mercury, £35 75lb.; bichromate potash, 5s. 6d. lb.; chlorate, 4s. 6d. lb.; permanganate (Japanese), 14/6 lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. lb.; borax, 122s. 6d. 100lb.; cyanide sodium, 1s. 3d. to 1s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; nitrate (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, about £110 per long ton.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 28s. to 33s. wholesale, and 3s. to 3/6 each retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 65s.; ditto, 3/22, 40s. to 42s.; 7/22, 75s. to 80s.; 7/20 120s.; 7/18, 160s.; tubing, 46s. to 50s. per 100 ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON & STEEL.—Imported, ¼in. & 3-16in. round iron & steel, 90/- to 96/-; ½in. do., 85/-; ¾in. steel, round, 80s.; ½in. round iron, 77/6; do. steel, 70s.; ¾in. round iron, 70s.; do. steel, practically none in town; ¾in. round iron, 62s. 6d. to 65s.; ¾in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunsward local iron, 45s. 100lb. Vereeniging mild steel also 50s. per 100lb. Steel-plates, 75s. to 80s.; many sizes unobtainable. Hexagon and cuphead bolts, ¼in. diameter, 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ¾in. diameter up to 3in. long, 2s. 6d. lb.; ¾in. dia., 1s. 6d.; 3½in. and up long, 1s. 6d. lb.; ½in. dia. up to 2½in. long, 77s. 6d. 100lb.; ½in. dia. and 2½in. up long, 75s. per 100lb.; ¾in. dia. up to 2½in. long, 1s. 6d. per lb.; ¾in. diameter 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 1s. per lb.; ¾in. and lin. diameter, same price as ¾in. diameter; nuts, ¾in., 1s. 3d. per lb.; ½in., 85s.; ¾in., 95s.; 1½in. and 1½in., 85s.; 1½in. to 1½in., 87s. 6d.; 2in. up, 92s. 6d.; washers, all 55s.; rivets, 3-16in., 1s. 6d. lb.; ½in., 5-16in., 1s. 6d. lb.; 7-16in., ¾in., 1s. 6d. lb.; ½in., 75s. to 80s.; ¾in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and dies, 32s. 6d. to 35s. 100 lb.; rails, £35 per ton; picks, 4lb., 40s. dozen; shovels, 90s. upwards dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s. 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.

In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

The issued capital of the British Central Africa Company is £1,468,000, out of an authorised total of £1,500,000 in £1 fully-paid shares. The company owns 375,000 acres of freehold land in the most fertile part of East Africa—to wit, Nyassaland—a climate extremely suitable for white men, and where the supply of native labour is plentiful and cheap. The company's policy is to lease its lands rather than to sell them. This it is doing in circumstances which produce a continually augmented revenue. As an auxiliary to the land business its trading stores make constant steady progress. In this respect it has reaped the benefit of large stocks held at the outbreak of war and well maintained since. Its 40,000 acres of plantations are under cotton, tobacco, coffee and fibre. The crops have realised high prices during the last three years. In fact, Nyassaland cotton commands higher figures than the American variety, and is only second to the Egyptian product. In tobacco the company has been fortunate, and as regards fibre its output is keeping proportionate pace with the constantly expanding demand. Developments of great importance are likely to follow the expenditure of £800,000 by the Nyassaland Government on a railway to tap the millions of acres bordering on Lake Nyassa. These railway extensions are expected to increase the profits of the company's present flotilla on the Zambesi River, which has done well for it in the past, and is expected to do better in the future. British Central Africa share interests include £175,000 of the second debentures in the Shire Highlands Railway and the whole of the ordinary stock of the company—namely, 20,000 shares of £5 each. The company also holds £50,000 of the preference capital of the Central Africa Railway, of which the dividend is guaranteed by the Nyassaland Government. This holding is in addition to the whole of the railway company's other share capital. The company's liability as guarantor of the 5 per cent. first debenture stock of the Shire Highlands Railway is largely technical, since the railway is earning much more than the money required for the service. As for profits, these were £72,875 in 1916, with an estimated aggregate of £100,000 for 1917, and a figure again in excess of that for 1918. The balance sheet at December, 1916, showed current liabilities £42,006, against which there were liquid assets, cash, Treasury bills, Exchequer bonds, sundry debtors, cost of produce in land and in transit, £261,499.



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Engineering Notes and News.

RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—X.

THE following is the continuation of Mr. A. E. du Pasquier's article on "Railway Electrification":—

A brief description of the locomotives is as follows:—The locomotives of Baldwin-Westinghouse make have articulated trucks, and weigh 135 tons each. From the outline sketch of the locomotive it will be seen that each truck has two driving axles and one carrying axle, the carrying axles being mounted radially. The wheel base is thus divided into two separate units, connected at adjacent ends by a hinged coupling. The outer ends of the trucks are fitted with standard buffers and friction draft gear with standard coupler, the drawbar pull being transmitted through the truck frames. A single cab controls the operating and control apparatus, and is provided with end doors and platforms for convenient passage between two or more locomotives when coupled together, or between the locomotive and the train, and in addition, there are side doors at opposite corners. The apparatus is arranged along the centre of the cab, so that it is readily accessible and leaves a clear passage on either side. Each locomotive is provided with two overhead Pantograph trolleys, having automatic self-adjusting action, and arranged for a working height varying from 16 feet under bridges to a normal height of 24 feet in the open. The motors drive through twin gearing on to a jack shaft, which is connected to the driving wheels through the ordinary side rod or coupling bar of steam locomotive practice. The motors are of the three-phase induction type, with wound secondaries, and arranged for operation at 725 volts on a 25 period system. Their one hour rating, at 14 miles per hour, is 410 h.p., continuous rating 325, the continuous rating at 28 miles per hour being 375 h.p. The specification called for a maximum tractive effort for five minutes, with wheels at rest; actually the maximum tractive effort exerted under these conditions on test was 20 per cent. more than specified. There are two running speeds, 28 and 14 miles per hour, and a switching speed of 7 miles per hour. The control is effected both by cascade and pole changing methods. In starting with the 7 mile combination, the motors on each truck would be connected in cascade and the two trucks connected in parallel, resistance being inserted in the secondaries for starting. With this combination the stators would be arranged for 8 poles. For the 14 mile speed all motors would be connected in parallel, with 8 pole stators, and for the 28 mile speed the motors are again in parallel, but with stators connected for four poles, resistance being used on all intermediate steps. The control is carried out on the well known multiple unit system. The liquid rheostats are similar in design to those in operation on the Italian State lines, and permit an adjustment of the load on the individual motors, so that the engineman, by watching his ammeters, can develop the maximum tractive effort of the machine without danger of burn out of any part of the equipment. Each locomotive is additionally provided with an air compressor driven from the phase converter through a multiple disc friction clutch. This clutch is controlled by the main receiver pressure, so that the compressor is operated only as required. Each locomotive is equipped with straight air and automatic air brakes, which, however, are not used in practice except for actually bringing the train to rest, and is also equipped with the necessary ventilating apparatus for the motor equipment, transformers, etc. The question of the purchase of power from an adjacent Hydro-Electric Company was carefully considered, and it was decided that the Railway Company could more economically generate its own power, and water considerations led to the selection of Bluestone Junction as the most suitable site, the power station plant consisting of three 10,000 k.w. steam turbo sets, 25 period, 11,000 volts. All the energy is delivered into a main sub-station at Bluestone, and there stepped up to 44,000 volts

and transmitted to five step-down sub-stations of a capacity ranging from 2,000 to 10,000 k.w., situated at suitable points along the line. The main 44,000 volt transmission line is carried on pin type insulators on one side of the catenary construction, a $\frac{3}{8}$ inch steel ground wire being carried above the transmission lines over the whole length of the line. The crossarms on all poles are connected to this ground wire, which is itself grounded every 400 yards. At the sub-stations the high tension lines are sectionalised by means of air break switches located on the roofs. No supplementary feeders are necessary for the distribution system, the power supply being effected entirely by means of the contact lines. The trolley line consists of a special grooved phono electric wire, corresponding in section to 000 copper wire. The contact wire is clipped to the auxiliary messenger cable at intervals of 15 feet, and this latter auxiliary wire is hung by straps at intervals of 30 feet on the messenger cable itself, which is a 7-16 extra high tension galvanised steel cable. Such construction gives very flexible and smooth operation. To give a clearer comparative idea of the immense tonnage handled on this section of the Norfolk and Western line, it is instructive to compare the figures given for 1916 with the ton miles for freight given by Mr. Kirkland for the Chicago, Milwaukee and St. Paul railroad, for the month of August, 1916, namely, 127,630,000 ton miles. An average monthly figure for the year 1916 on the Norfolk and Western section would be 50,000,000, and when you take the mileage as approximately 30 to 226, it works out that the tonnage on the Norfolk and Western section is very nearly three times as large. Since these locomotives were built, considerable improvements have been effected; the latest designs, while only weighing 250 tons, have an h.p. capacity of 4,800, with a maximum tractive effort of 130,000 lbs., all of which is concentrated in a single cab unit, but perhaps the most interesting development is the synchronous phase converter, by which 100 per cent. power factor is obtained on the locomotives, thus eliminating some of the line losses which were encountered with the induction type phase converter originally installed, and effectively removing one of the few possible objections to the system. In its final form, its claims cannot possibly be ignored. Very powerful locomotives of this type are now being supplied to the Pennsylvania Railroad, capable of developing power up to a maximum of 7,000 h.p.

In conclusion, I propose giving a few particulars of the experimental 5,000 volt D.C. equipment in operation on the Grass Lake and Wolf Lake division of the Michigan United

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Traction Co.'s road. It was realised that even 3,000 volts might not be sufficiently high to eliminate all the difficulties of current collection in the case of large locomotives, or to restrict the number of sub-stations required and the cost of the line copper to reasonable dimensions. It was desirable, in view of the importance of high voltage for certain classes of D.C. electrification, to design on some practical operating scale equipment for 5,000 volts, which, if successful, might permit of the trolley line voltage being raised at one step to this figure, instead of gradually by small increments. To demonstrate the possibilities of the system, the Michigan United Traction Co. were prepared to adapt their 12 mile branch line from Jackson to Grass and Wolf Lakes, summer residential districts, with a limited service of about three cars a day. The existing 600 volt trolley line was retained, with the simple addition of two porcelain strain insulators located in the span wire on each side of the ordinary cap and cone insulator. Direct current power for operating the car is obtained from steel tank mercury vapour converters in the sub-station at Grass Lake, which supplied 600 volt D.C. power for the normal operation of the line. I do not propose describing these rectifiers, as the principle on which they operate is well known, and they are extensively used on a small scale for battery charging and so on, but this was the first application to such high D.C. voltages. From the diagram of connections it will be seen that there are three of these converters connected in series to give 5,000 volts on the trolley line. The use of mercury rectifiers is not an essential part of the 5,000 volt equipment, but if practical they would be the cheapest and most efficient means of obtaining D.C. voltages of these dimensions. On the other hand, they cannot operate D.C. to A.C., so that regenerative operation is not practical beyond the D.C. busbars. The car equipment consisted of two twin motors of 200 h.p. capacity at 2,500 volts, giving a total capacity of 400 h.p. for the car. An elementary diagram of the motor arrangement is given, and shows two armatures in one common field frame, with separate pinions engaging with one common spur wheel. The armatures are in series, so that the voltage on any one commutator is limited to 1,250 volts. Although the motors would appear to be very deep as compared with the ordinary construction, there was no difficulty in accommodating them on 38 in. diameter wheels, with satisfactory clearance. The control is accomplished by switches of the double break type, electro-pneumatically operated, and has been entirely successful, the wear on contacts being reported less than with ordinary 600 volt operation. The car was put into service on June the 1st, 1915, and on September the 1st, 1916, had completed 37,000 miles of commercial operation, of which 30,620 was on the 5,000 volt line. For a 15 mile schedule this is very fairly regular work. The operation of the car was very satisfactory; there were no commutator troubles, and the very few troubles that did arise were confined to the grounding of a main resistance due to the unsatisfactory insulation of an asbestos covered lead, grounding of a commutating pole field coil after running through a pond of water 6 in. to 9 in. above the rails during the spring floods, and once there was trouble due to a lightning stroke, which occurred immediately after a 44,000 volt transmission line had dropped on to the trolley line and destroyed the car's lightning arrester. There was also one armature defect due to an open circuit which occurred after 30,000 car miles. No switching or control difficulties arose, and generally the results obtained were of a distinctly encouraging nature. When starting on this contribution it was my intention to devote some space to a consideration of the limiting factors of steam locomotives and the heavy and excessive operating and maintenance charges that are inevitably incurred with their use on any heavy railroad service, but this contribution has already assumed such length that instead I will ask Mr. Kirkland if he can see his way to briefly deal with this aspect of the case in his reply. The locomotives illustrated and described in these remarks are generally representative of the different methods of connecting the motive power to the driving wheels in favour at the time such locomotives were designed, or to meet special conditions. They include examples of side rod locomotives, sub-divided into connecting rod and jack shaft drive—first Pennsylvania locomotives,

crank and Scotch yoke—Italian State Railways, geared jack shaft—Norfolk and Western, and geared quill drives, which type is exemplified in the New York, New Haven and Hartford, and Chicago, Milwaukee and St. Paul locomotives. It is interesting to see whether, of all these different varieties, any particular transmission is emerging as the finally approved solution. Continental experience has been mainly with locomotives of the side rod type, and difficulties have been reported due to vibrational troubles at high speeds, leading to failures of cranks or jack-shafts. One reason why side rod drives have given trouble in electric locomotives, whereas they are a common and inseparable feature of steam practice, is the absence of any cylinder cushioning in the electric locomotive, and the consequent general inelasticity of the mechanical system. That this difficulty can be overcome by proper attention to bearing adjustment is exemplified in the remarkable operating results of the earlier Pennsylvania locomotives. Gear driven jack-shafts, as in the Norfolk and Western locomotives, obviate many of the difficulties, but it does seem as though the tendency of the time is to avoid side rods altogether by driving each axle directly through gearing, quill mounted, as in the latest Chicago, Milwaukee and St. Paul locomotives, the motor being placed above the axle, entirely spring supported, and securing a reasonably high centre of gravity. It is probable also that with this design a twin motor arrangement will be found to give the most satisfactory results. The actual arrangement adopted in the latest Chicago, Milwaukee and St. Paul engines is illustrated in Fig. 18. There are several advantages: smaller weight for output, economy in gearing, greater reliability in service due to lower voltage across armatures, and, as previously mentioned, it is claimed that the utilisation of space is better accomplished. These are all important advantages, and may possibly lead to the standardisation of this type of locomotive, at least for D.C. or single-phase equipments. In the preparation of a contribution of this nature, recourse for accurate data has to be largely made to existing publications, and in this respect the writer would like to acknowledge his indebtedness to papers read by Mr. A. H. Babcock and Mr. C. H. Quinn, from which he has freely quoted, to various text books, notably Burch and Dover, and to the many Westinghouse publications dealing with the subject, and last, but not least, to Mr. C. W. R. Campbell for his kindness in preparing the slides illustrating these remarks, and to Mr. McKowen for so ably operating the lantern.

Under the recent decision of the United States War Industries Board to take control of the domestic pig tin situation by a license system, the United States Steel Products Company only will be granted import licences. The company will act under Government direction and in the interest of consumers. The "Official Bulletin" announced the decision in the following terms:—All users and dealers in pig tin will be licensed, and will secure their future requirements of pig tin from the United States Steel Products Company, which will make distribution under the direction of the War Industries Board. The Inter-Allied Tin Execution, who will carry out the terms and agreements of the Inter-Allied Pig Tin Pool recently arranged in London, will control the buying price in each producing market. The War Industries Board will control the prices and terms under which the pig tin is to be sold to the domestic users and dealers. Preliminary to the issuance of licences to the users and dealers in pig tin an inventory of stocks on hand and contracts unfilled by the two thousand odd individuals and plants affected is being made by the Tin Section of the War Industries Board. If necessary, there will be a redistribution of the stocks on hand to equalise them according to essential uses.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

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664. William John Stewart.—Improvements in the moulding or coating of reinforced concrete ships and other structures.
665. Alexander Constantine Ionides.—A method and means for mixing the constituents of a combustible gaseous mixture.
666. John William Smith, Industrial Appliances, Ltd.—Improvements in valves used on lubricating systems for retaining oil pressure in the feed pipes and controlling the discharge of lubricant from the pipes.
667. Noel Yeo Robertson, Herbert Moss.—Improvements in means for controlling the flow of fluid through flexible pipes.
668. Victor Albert Alexander.—An improved spool for cinematograph films.
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688. Gideon Sundback.—Improved method of and apparatus for making fasteners.
689. Martinus Landsberg.—Triple patent dogs for man hoist or skip.
690. Percy Robertson.—Improvements in electric lighting systems for trains and the like.
691. Alois Gerard Corneille Pittevit.—Improvements relating to the welding of different metals to form a composite ingot.
692. Henry Samuel Potter.—Improvements in hammer drills and the like.
693. Francis Henry Stevens.—Improvements in hydraulic power transmission apparatus.
694. Thomas Binks Kitson.—Improvements in or relating to the manufacture of hollow glass ware and to machinery therefor.
695. James Wilsbir.—Improvements in valves for percussive tools.
696. Russell William Mumford.—Decolorising and purifying agents and methods of making the same.
697. The Watford Manufacturing Co., Ltd.—Improvements in and relating to collapsible boxes or cases.
698. Arthur Newton-Smith.—Improvements in the picking mechanism of looms.
699. Louis Lucien Ruffier.—Improvements relating to stereoscopic cinematography.
700. Ernst H. Jalmar Waloddi Weibull.—Improvements in roller bearings.
701. Henry Theophilus Johnson.—Improvements in or relating to the separation of fats, oils, or the like from liquids.
702. Arthur George Cross.—The monolithic wall slab.
703. Luckenbach Processes, Incorporated.—Mineral selective and frothing agent and processes or methods of producing and using the same.
704. Luckenbach Processes, Incorporated.—Mineral selective and frothing agent and processes or methods of producing and using the same.
705. Luckenbach Processes, Incorporated.—Composition of matter and methods of and apparatus for using same.
706. William Jefferson Woods, Frank Horace Searls.—Apparatus for refrigerating and liquefying gases.
707. General Electric Company.—Improvements in and relating to circuit interrupters.
708. Charles Algernon Parsons.—Turbine blade attachments.
709. Hans Ivar Parson.—Improved safety holder for stirrup straps.
710. William Coackley.—Improvements in bars or the like for supporting the glazing or roof and like structures.

711. William Coackley.—Improved fittings for use in the glazing roof and like structures.
712. The Sopwith Aviation Company, Ltd.—Improved device for indicating the level of liquid in a tank or other receptacle.
713. The Sopwith Aviation Company, Ltd.—Improvements in and relating to radiators for the water cooling systems of internal combustion engines, employed on aircraft.
714. The Singer Manufacturing Co.—Sewing machine.
715. George William Beldam, Albert Uriah Benjamin Ryall.—Improvements in or connected with the soles and heels of boots and shoes.
716. Frederick Lionel Rapson.—Improvements in or relating to self-starting devices for internal combustion engines.
717. Alfred Bonde, Trygve Norman.—Improvements in crafts of steel concrete.

Glynn's Lydenburg.

The following footage was driven, risen and sunk during the quarter in undeveloped ground:—Compound Hill: Total, 1,000 ft.; on reef, 572 ft.; sampled, 440 ft.; payable, 400; average width and value of payable footage, 14.0 inches, 12.7 dwts. Werf Mynpacht: Total, 129 ft.; on reef, —; sampled, —; payable, —; average width and value of payable footage, — inches, — dwts. Total, 1,129 ft.; on reef, 572 ft.; sampled, 440 ft.; payable, 400 ft.; average width and value of payable footage, 14.0 inches, 12.7 dwts. The comparatively low footage exposing reef as compared with the total number of feet driven is due to its undulating character, passing at times into the hanging and at others into the footwall. No sampling was possible during October. In addition to the above, 1,025 feet have been driven, risen and sunk in developed ground in Compound Hill, of which 911 feet were on reef, 590 feet sampled, 320 of which were payable, averaging 15.8 dwts. over 8.3 inches. Reduction works: Ore received from mine, 10,665 tons; tonnage crushed, 10,915 tons; number of stamps operating, 25; number of tube mills operating, 1; assay value of ore before crushing—mill yield per ton, 3.7 dwts.; assay value of mill tailings per ton, 6.8 dwts.; total, 10.5 dwts. Total yield, 5,539.1 fine ozs., equal to 10.2 dwts. per ton. The influenza epidemic completely closed down all work on the property on the 22nd October. Many of the natives went down with it suddenly, and the rest deserted. Milling was resumed with five stamps on the 11th November and no increase has as yet been possible. Approximately 50 per cent. of the white employees also suffered from the disease, all of whom have now recovered, with the exception of the Werf Mine Captain, Mr. W. Gallant, who unfortunately died. Compound Hill: Good progress with the development of this section was being made up to the time work stopped. Stopping operations were carried on from this mine, 2,100 tons being milled during the quarter. Werf Mynpacht: Satisfactory progress was made with the drainage system, both in the mine and the new drainage drive. The latter would probably have been completed by now had the work not been stopped by the prevailing epidemic. Stopping from this section had been recommenced on a small scale, though there is still a large quantity of water to deal with. Work on the Osborn shaft was started early in October.

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Company Meetings.

MODDER EAST. LTD.

The second ordinary general meeting of shareholders in the Modderfontein East, Ltd., was held in the board room, Corner House, December 19. Sir Evelyn Wallers presiding. In moving the adoption of the directors' report and balance sheet, the chairman said:

The consulting engineer's and acting manager's reports give in considerable detail the work carried out on the property up to June 30th, 1918, and since that date the quarterly report for the succeeding three months has been in your hands. Therefore, in order to bring you as fully up to date as possible the following figures give the results of all development up to the end of November, 1918:—

NO. 1 SHAFT SECTION.		
Description.	Footage advanced.	Footage sampled on reef.
19th Lev. main haulage north	1,909	30
No. 1 main haulage raise	1,641	1,260
No. 2 main haulage raise	928	650
19th Level drive north	244	70
No. 1 raise 19th Level	512	251
No. 3 raise 19th Level	13	5
20th Level drive north	700	695
20th Level drive south	732	565
No. 2 winze 20th Level	258	258
No. 1 raise 20th Level	273	250
No. 3 raise 20th Level	223	225
21st Level drive north	398	380
21st Level drive south	504	410
No. 1 winze 21st Level	250	245
No. 2 winze 21st Level	588	588
21st Level intermediate drive	90	30
No. 2 winze 22nd Level	262	235
No. 1 incline	436	—
No. 2 incline	217	210
Crosscuts and sundries	2,430	197
Totals and averages	12,411	6,554
Drive from Modder B.	1,155	461

NO. 1 SHAFT SECTION.		
Description.	Reef width.	Value.
	inches.	dwt.
19th Level main haulage drive	20	2.0
No. 1 main haulage raise	17	7.4
No. 2 main haulage raise	15	7.5
19th Level drive north	20	4.5
No. 1 raise 19th Level	19	12.5
No. 3 raise 19th Level	16	12.3
20th Level drive north	20	7.7
20th Level drive south	19	43.4
No. 2 winze 20th Level	14	14.8
No. 1 raise 20th Level	7	43.9
No. 3 raise 20th Level	15	9.3
21st Level drive north	17	4.2
21st Level drive south	13	30.2
No. 1 winze 21st Level	25	45.2
No. 2 winze 21st Level	15	22.8
21st Level intermediate drive	9	16.6
No. 2 winze 22nd Level	18	24.3
No. 2 incline	27	4.0
Crosscuts and sundries	17	15.1
Totals and averages	17	16.9
Drive from Modder B.	24	5.9

The average values disclosed differ little from the results as published in the last quarterly report, viz., for September. A detail perusal of the results from separate development faces, which can be followed by reference to the plan accompanying the report, will show the variations common to mines on the extreme Far East Rand, i.e., the disclosures are either quite unpayable or moderately high grade. So far the best results obtained have been in the locality between No. 1 incline and the Geduld boundary. A recent estimate indicates the payable development to date to consist of 350,450 tons of an average value of 7.3 dwt. over a stoping width of 57 inches, a fair result taking into consideration the short time development has been carried out on this mine. No. 2 shaft, which is

designed to tap the reef body about in the centre of the area leased from the Government, has reached a depth of 900 feet. The type of ground encountered has been against rapid sinking, and recently water troubles hung this shaft up for two months. The difficulties have now been overcome, and sinking is again proceeding.

Located by Borehole.

No. 3 shaft, the most northerly on the leased ground, has reached a depth of 818 feet. The reef, from the available geological data, should have been intersected at about this horizon; unfortunately, however, a dyke was encountered at this depth, and operations are at present confined to efforts to determine by driving and diamond drilling the size and extent of the dyke, and at the same time to locate the position of the reef body. I have just heard that the reef was located yesterday by borehole. Fifty-five feet of driving will expose it.

From the plan attached to the report you will see that our large area of ground has so far been opened up only to a small extent. The scheme of development which we have adopted, as I told you last year, is to connect all three shafts as soon as possible, and to push two main drives from the Cloverfield shaft one westwards towards the Modder B, and the other south through the centre of the Cloverfield area. These headings are being extended as rapidly as circumstances permit, and although considerable distances have still to be driven, which will take time, you will realise that when once completed these main arteries, from which lateral development will proceed, will enable us to secure a very comprehensive knowledge of that portion of the property in which they are situated. The Rand Klip area, defined on the plan by a broken boundary line (as the minepacht has not yet been finally selected), will be left alone for the present. Unfortunately, as I have already indicated, the luck has been against us rather in the character of the country passed through by our two new shafts, and in consequence the progress of our work has been somewhat retarded, in addition to which the expense has been heavier than would otherwise have been the case.

The net expenditure at the close of the financial year, viz., June 30, 1918, had totalled £239,229, as shown in the schedule of expenditure given in the annual report. Since that date the expenditure at the end of November, 1918, had increased to a total of £348,533, and the working capital of £350,000 had been practically exhausted. The expenditure necessary to prove the property will average £27,000 a month, and in the course of another year's work a considerable area of new ground will have been tested.

Further Funds Needed.

The board has at present under consideration the question of raising further funds to meet the company's requirements. As you know, the first option expires on the 2nd July, 1920, and it is anticipated that in about 12 months' time, provided no interruptions to the work occur, the property will have been opened up sufficiently to enable shareholders to determine whether or not to exercise their options. Additional money will be raised, probably on loan, but as yet no definite arrangements have been concluded. We hope to communicate the result of the board's negotiations to shareholders at an early date. In the meantime, the Central Mining and Investment Corporation, Ltd., has agreed to advance the funds to meet our current expenditure.

Mr. Walter C. Coe remains in charge at the mine. To him and his staff, as well as to Mr. H. Stuart Martin, the consulting engineer, and the Rand Mines mechanical engineering department, our thanks are due for excellent services rendered. I now beg to move that the directors' report and balance sheet for the period ended 30th June, 1918, be adopted.

A number of questions were put, most of which had already been dealt with in the chairman's opening remarks. In reply to one question, Sir Evelyn Wallers said he disliked prophesying anything, but he hoped that, given a continuation of the same percentage of development hitherto experienced, in twelve months' time to have three-quarters of a million tons developed.

One of the shareholders, Mr. Stephens, said that as a former shareholder in the Rand Klip he had been forced to become a shareholder in the Modder East, but he could truly say that he had fallen from the frying pan into the fire. As a Rand Klip shareholder in the Modder East he had become subject to increasing and heavy liabilities for meeting which there existed no provisions, except the pledging of the company's assets to provide for the liabilities. The speaker went on to say that an extremely awkward position had been created, as all the available capital had been tied up by the option sales, so that it could not become available until and unless the options were exercised. He saw no reason why those options should be exercised. By the time they matured development would either have ceased through lack of funds to carry on or a heavy liability for interim advances and payment of heavy Administration expenses would exist, and the company would be in the hands of money-lenders. Mr. Stephens concluded his remarks by expressing his determination of forming a shareholders' protection committee. He was certain the property was a good one, but he was also quite certain it was not in the best hands.

Sir Evelyn Wallers briefly replied, and said that Mr. Stephens apparently was happy in a company, which was not active, but was unhappy in a company which was active. Mr. Stephens's remarks called for no reply.

The directors' report and balance-sheet were agreed to, and the retiring directors, Sir Evelyn Wallers and Colonel W. Dalrymple were re-elected, as were the auditors, Messrs. H. G. L. Panchaud and J. H. D. Lang.

NOURSE MINES, LTD.

Mr. H. C. Boyd presided over the annual general meeting of shareholders of the Nourse Mines, Ltd., held in the boardroom, Corner House, on Dec. 19. In moving the adoption of the directors' report and balance sheet, the chairman said that throughout the year the native labour supply had been quite insufficient for the company's needs, and it had never been possible to employ the plant to anything like its full capacity of 50,000 tons monthly, the average amount milled monthly being under 40,000 tons. The introduction at very considerable cost of a large number of jack hammers proved of great assistance in combating the deficiency, and had there been no further decrease in the labour

force improved results would undoubtedly have been realised, but during the current financial year the position had become steadily worse, and finally as a result of the influenza epidemic the serious loss of £4,288 had been incurred for last month. Altogether 1,840 natives were admitted to hospital between September and November, of whom 28 died, while of the 184 cases among the European employees, fortunately only one had resulted fatally. During the past 11 weeks the native labour force had decreased by some 800 boys, and the mine had now only about 60 per cent. of its underground complement, and there was a steady daily wastage. While there was some sign of improvement in recruiting within the Union, the supply of labour from the East Coast was interrupted, and it appeared inevitable that losses must be incurred during the next two or three months; under the circumstances it was not advisable to declare a dividend for the present half-year. Everything possible was being done by concentration of mining operations to use the available labour to the best advantage, but shareholders would appreciate how much disorganisation arose from attempting to carry on work with a constantly diminishing labour force.

The materially reduced tonnage of the past year, combined with a recovery nearly 2s. a ton lower than that of the previous year, produced a greatly decreased profit of £60,977, after allowing for sundry items of revenue and expenditure. Development operations were unavoidably restricted, the total footage being 11,746. Reef disclosures were mainly confined to the South Nourse section, where the improvement in the main reef leader was maintained. The results from the investigation of the south reef in the eastern section of the mine had been fairly encouraging, but an appreciable amount of main reef previously regarded as payable had proved not to be so when further opened up. Altogether 313,000 tons of payable ore had been developed, of an average value of 7.6 dwts., a considerable improvement in value compared with the disclosures of the previous year. With the increased costs it had been found necessary to raise the pay limit, and consequently a large tonnage, chiefly of main reef, which had previously been included in the ore reserves had had to be eliminated. Some 406,000 tons of an average value of 4.6 dwts. had thus been removed from the reserves, possibly only temporarily, and at the close of the year the reserves amounted to 1,513,600 tons of an increased average value of 6.8 dwts. per ton. As the consulting engineer indicated in his report, the company had been justified in expecting an improvement in yield for the current year, but so far, in spite of close investigation, the average yield for the year was precisely the same as that of last. The mine was perforce now stopping about half its total tonnage in the South Nourse section, and during the past week or so the grade had shown some signs of improvement. There was no change to report as the result of the year's development, which was mainly in the South Nourse section. Values continued to be variable, but satisfactory on the whole. At the moment several of the headings were in some of the dykes, which unfortunately infested the property. Mr. Boyd concluded by expressing regret at the death in action of Private Thomas O'Kelly, one of the company's employees.

The retiring directors, Messrs. H. C. Boyd and H. Nourse, were re-elected, as were the auditors, Messrs. H. J. Lamb and C. L. Andersson and Co.

S.A. ALKALI, LTD.

The annual general meeting of shareholders of the S.A. Alkali, Ltd. was held in the Board Room, Consolidated Buildings, Dec. 19, Mr. A. V. Lind-

bergh presiding. In moving the adoption of the directors' report and balance sheet, Mr. Lindbergh, at some length, went into the company's history since December 31st, 1912. The company had been registered with a capital of £25,000 to acquire and work certain rights over the farm Zoutpan. Several previous owners had unsuccessfully worked the farm, which was mainly due to the fact that it had been worked as a saltpan. The property contained a much more valuable asset in the form of soda, contained in solid beds, and in the mud which filled the pan. All authorities were convinced that there was a deposit worth millions sterling. Up to the end of 1917 the company had confined itself to the working of the trona beds. Owing to the almost insuperable difficulties encountered in working these, the company had decided to confine its attention to working the mud, which all authorities considered to be their main asset. Mr. J. R. Williams undertook to devise a process by which the mud could be worked economically. After a trial, the technical board of the company (Mr. J. T. Wyndram and Mr. W. Mauss) decided that it was impossible to continue the process, and recommended its abandonment to the board. The board had no option but to accept the recommendation, in view of the results. Another process was resorted to—the erection of a plant which was to produce ten tons of soda a day was rapidly proceeded with. Unfortunately unforeseen circumstances had made it impossible, up to the date of the meeting, to complete the plant. At the present date the plant was almost completed, but until it was actually in working order it was impossible to say that in actual working the new plant would be a success. The latest figures supplied from the actual tests taken since Saturday last, placed a much more hopeful complexion on certain difficulties. There had been a good many difficulties to face during the last few months. A demand was received from the railway, claiming a large sum of money, on the grounds that the company had consigned its products under a wrong description. The Board had been able to settle the question for a reasonable sum and also to arrange for future railway rates on a most satisfactory basis. When the Board decided to adopt the Williams' process and were convinced that it would be a success, orders were accepted from Japan for the supply of large quantities of soda. These they were unable to fulfil, and the company was threatened with proceedings. An agreement, however, had been entered into with the Japanese people for future supplies when they were in a position to produce, and no claim would be made on the company for any past failure.

Raising Further Capital.

After dealing with the company's financial position, the chairman said that they were faced with the position that the company had expended all its cash in hand, and it would be necessary to make arrangements for the raising of further capital. It was extremely unfortunate that they were not in a position to give definite results of the portion of the new plant which they had been working. If they were in such a position, and the results were satisfactory, they would have no hesitation in saying that funds could be rapidly raised to work the company on a very much larger scale than at present. Offers of financial support had been received and in particular their Japanese friends

had asked them to submit any proposals under which they would be allowed financially to assist them. It was impossible for them to make any definite statement that day, as they had not yet been able to make any proposals. The delay was due entirely to their waiting for the results of the new process and until they got these it would not be advisable to commit the company to any further obligations. Under the articles of association, whatever increase of capital might be recommended by the directors must be first offered to shareholders, and before any arrangements were made with Japan they would also be submitted. In conclusion, he moved the adoption of the report and balance sheet.

Mr. Williams, one of the shareholders, said he could not congratulate the chairman on his address from the chair. Dealing with the report the speaker wished to know how many days the working on the property had been stopped owing to there being no coal at all on the property. How much money, he asked, had been spent on absolutely useless machinery. Was it true or not, that notwithstanding the serious obligations with Japan, one of the directors had written to Dr. Schlesinger Delmore offering the whole of the company's output with the exception of 120 tons to the Transvaal Chemical Co. Furthermore he wanted to know whether tenders had been invited for the new machinery bought.

Replying to the questions, Mr. Lindbergh said that on account of heavy floods there might have been days when there had been a shortage of coal. Besides, there had been a lack of trucks. Regarding the offer to the Transvaal Chemical Co., Mr. Lindbergh said that the whole of the output had not been offered by any means and whatever had been done had been done in the interest of the company. On Mr. Williams's final point, the speaker said that since he had been connected with the company tenders had been invited for everything.

Mr. Wyndram, in the course of a few remarks, dealt with the value of the company's product, and expressed the opinion that the principal difficulties had been overcome.

Mr. Moseley criticised the balance sheet and asked for certain details, which were supplied by the chairman.

The report and balance sheet were agreed to. The retiring directors, Messrs. A. V. Lindbergh, J. V. Wyndram were re-elected, as were the auditors, Messrs. F. A. Stokes and F. Roberts.

The meeting concluded with votes of thanks to the chairman and to the past chairman, Mr. Llewellyn Edwards.

MAKGANYENE DIAMONDS.

The second annual meeting of shareholders of the Makganyene Diamond Syndicate, Limited, was held in the Board-room, Exploration Buildings, last week, Mr. W. J. Gibson presiding.

In moving the adoption of the report and accounts, the chairman said that Mr. McLelland had now completed purchasing the new plant for thoroughly testing the mine. The plant included a set of rolls, comet crusher and an eight foot pan with boiler and engine to supply adequate motive power both for running the plant and for hauling the yellow ground out of the mine. This plant was being erected, and in the course of a few

more weeks would be ready and they would then be able to make a reliable and proper test washing on an adequate scale to give them a reliable gauge of the value of the mine. Shareholders must understand that with the old plant it was impossible to do this, the ground was taken out of the mine in a raw state and was put through the pan without being pulverised, consequently, lumps of yellow ground passed through intact and no doubt many diamonds were not recovered. With the new roll plant all the ground would be reduced to 3-16th of an inch before it entered the new pans and practically all the diamonds would be recovered. Meantime, pending the completion of the new plant, Mr. McLelland had decided to proceed with washing ground direct from the mine at the 50 foot level with the present six feet pan. This would enable them in a measure to check the previous results they had obtained by the same incomplete treatment, and the value of the diamonds recovered would help to pay the cost of opening up the mine. Washing in this way would begin next week. The new incline shaft was already complete down to the 50 foot level and Mr. McLelland intends to put in a series of tunnels at that level into the yellow ground in all directions towards the outside rim of the mine. In that way he would speedily determine the number of claims the mine area contained. Unfortunately the epidemic of influenza had been very severe on the mine and he was sorry to say that one white man, Mr. Joordan, the son of the owner of the farm, died. On behalf of the syndicate he wished to express deep regret and sympathy with his father and relatives. He regreted to have to inform them that seven native workers also died, and their sympathies are given to their sorrowing friends. Prompt measures were taken, otherwise the death roll might have been greater. He was glad to be able to say that the time of trouble seems now to be over. It was hoped that the mine would be working its full complement of labour. He thought it was due to him to express the confidence the Board had in Mr. McLelland, and its appreciation of the work he had already done since he took charge of the syndicate's property and works as managing director and consulting engineer. He forgot to mention that on November 15th, 1918, the Board resolved to increase the capital by £10,000 and notices were duly sent to the holders of rights under the vendor's agreement. A gratifying number of shares had already been applied for of this issue and it was

expected that very shortly the whole number would be taken up.

Mr. T. G. McLelland, in the course of a few remarks, stated that although he considered that under the old system of work the mine was a payable one, with the proper plant which was now being erected the results should be increased by at least 30 to 40 per cent., which would, of course, make a great difference. In his opinion there was no doubt but that it was a payable mine and one that had great possibilities, especially seeing that the quality of the diamonds were the finest in South Africa. The retiring directors were re-elected, as was the auditor.

SAKALAVA OIL FIELDS.

The fifth ordinary general meeting of shareholders in the Sakalava Madagascar Proprietary Oilfields, Ltd., was held in the boardroom, Consolidated Buildings, Fox Street, Johannesburg, on Saturday December 21. Mr. G. D. Alexander, chairman of the company, presided, and there was a large attendance.

The Chairman said that since the last meeting the board had had many difficulties to meet in regard to the progress of the work of the company in Madagascar. Most of those difficulties arose from the fact that the world was at war, others arose from men the board depended on having failed them. After briefly reviewing what had taken place as regarded the company since the present board took office, the chairman said that the directors had worked hard and consistently, and striven in every way to attain success, but the difficulties and disabilities arising from war conditions were sufficient to render all efforts futile. Restrictions on every side existed. After more than two years' close association with the company's affairs, and after having tried in every way to overcome difficulties that seemed almost insuperable, he had come to the conclusion, and his fellow-directors were all in accord with him, that to exploit oilfields of the dimensions of the company's claims in a foreign country and under the disabilities that existed, a mistake had been made in having too small a capital. The financial position of the company as at June 30 last showed that they had an amount of available capital left of £3,878, but since that time that amount had been reduced by expenditure, and was now £3,000. It would be apparent, therefore, that to carry on further capital must be provided. The directors recommended that options should not be renewed beyond February 28, 1918, but

should be offered to shareholders on the instalment system at the rate of 6d. per share per month. Continuing, the chairman said:—The board is in a position to say that a guarantee to take up 10,000 of those option shares is offered on the following terms: No limit is made as to the number of options that may be taken up. Every shareholder may exercise his or her option on the terms of 6d. per share per month, but in the event of any shareholders deciding not to take up their options, those who signify their intention to do so shall be entitled to take up any options not applied for at par within 12 months at pro rata. In other words, in order to keep the company going the directors guarantee that at least 10,000 shares will be applied for, thus providing for a further amount of £5,000 capital; any other shareholder who desires to do so can become one of the guarantors and take over part of the guarantee, or if sufficient numbers come forward the guarantee can be increased. Say for the sake of argument that the guarantee is increased to 20,000 shares and the holders of the remaining, say, 30,000 decided not to take up their options, then the guarantee of the 20,000 shares would have the right to an option pro rata on the 30,000 option shares not applied for for twelve months. Shareholders would have to notify their intention to accept or decline options by January 31, 1919. If the guarantee of 10,000 shares was not increased, the company could count on a capital of £5,000, plus £3,000 on hand, making a total of £8,000. It would be for the incoming board to decide whether to continue working in a small way in the hope of obtaining oil, or to devote the funds at their command to obtaining a capital suitable to the size of the proposition. In conclusion, the chairman drew the attention of shareholders to the interest being shown in the development of new oilfields.

Mr. W. M. Bielski seconded the motion for the adoption of the report and accounts.

Mr. W. J. Woolley opposed the adoption of the report on the ground that the report conveyed no information. He proposed that a committee of shareholders should be appointed to consider with the directors what had been done, and what could be done for the best possible advantage of the company, and to report to an adjourned meeting of shareholders on January 11.

In supporting Mr. Woolley's proposition, Colonel Hutchinson similarly criticised the report.

After further discussion Colonel Hutchinson, Mr. Woolley and Mr. Bielski were appointed as a committee, with power to co-opt another shareholder, and the meeting stood adjourned until January 11th, at 3.30 p.m.

The ordinary general meeting of the Wanderer (Selukwe) Company was held at the Cannon Street Hotel, London, E.C., on October 21, 1918. Mr. Edmund Davis, chairman of the company, presided. The chairman, in

moving the adoption of the report and accounts, said that after paying on August 15, 1917, the dividend of 1s. per share, which amounted to £30,000, they were left with a balance to carry forward of £4,776. To that had now been added the balance of profit for the year ended April 30, 1918, namely, £17,250, making the total at credit of the account of £22,027. They started the year commencing May 1, 1917, with estimated reserves of 60,000 tons; during the year sufficient ore was developed to enable 148,395 tons to be treated, and at April 30, 1918, the reserves were estimated at 48,000 tons. During the five succeeding months the mine had been able to treat 70,470 tons, but they appeared now to be getting to the end of their resources, as

the consulting engineer foreshadowed the necessity of closing down in December next. In view of the indications that they would shortly have to close down, it was desirable that any money they had in hand should be retained until the company was put into liquidation, and then returned by way of capital. Otherwise, if they were to pay a dividend as soon as they had sufficient funds in hand, it would be subject to deduction of tax at the present heavy rate of 6s. in the £.

Zaaiplaats Tin.

The Zaaiplaats results for the month of November, 1918, were as follows:—Days run, 24; concentrates won, 42 long tons; estimated profit for the month, excluding Government taxes and directors' fees, £3,314 19s. 3d.; capital expenditure, £299 6s. 3d.

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Notes and News.

No. 15 Circular Shaft, Crown Mines, Ltd., twenty feet diameter, was sunk during December (31 working days) a distance of 279 feet, viz., **Record Shaft Sinking.** from 655 feet to 934 feet, showing an average of 9 feet per 24 hours. This is the world's record, beating the last world's record of 252 feet made in No. 11 shaft, Crown Mines, Ltd. The work was in direct charge of the well-known Welsh master sinker, Ivor Rees. It is noteworthy that the drills used in creating the latest record were Holman sinkers and Holman hand hammer drills, manufactured by Messrs. Holman Bros., Cornwall, England. We hope to give fuller details of the work accomplished in our next issue.

* * * *

We have received several letters from shareholders of the above company, the head office of which is at Kokstad, East Griqualand, complaining that they are unable to obtain information regarding either the proceedings at the annual general meetings or the names of the directors, beyond that of the chairman, Dr. Thornton. We feel sure these complaints have only to be brought before those responsible for the conduct of the company to have them dealt with.

* * * *

The Press Bureau has issued the following:—Notice is given that, notwithstanding the signing of the armistice, no relaxation can at present be permitted in the restrictions on capital issues. The approval of the Imperial Treasury should still be obtained for all issues of shares, debentures, or other securities whether for cash or otherwise, for the subdivision or consolidation of shares, and for invitations for deposit loans carrying options, express or implied, to convert into shares or other securities.

* * * *

The report of the Jumbo G.M. Co. for the year to June 30 last states that milling and cyanide retreatment were stopped in March, 1917. **Jumbo Gold.** Tributaries continued work during the year, and gold value £8,508 was won, the royalty on which payable to the company amounted to £1,227. Tip Top Gold Mining Co.: The consulting engineers report that we have 18,000 tons of ore developed, worth 11·7 dwts. per ton, and advised that no further development work should be done, owing to the increased mining costs, etc., and recommended that this property should be closed down. Instructions were therefore cabled to Salisbury at the end of December last to stop all work and store the plant and machinery at the Jumbo mine. Owing to the high rates ruling in Salisbury for second-hand plant and machinery, it was deemed advisable to dispose of all plant not immediately required, and a large quantity has been sold during the year at satisfactory prices.

* * * *

The chairman of the Rhodesia Cattle and Land Company in mail week made a very interesting statement at the meeting of that company on the prospects of ranching in Rhodesia. **Ranching in Rhodesia.** The future of the country as a great cattle country, he declared, is without doubt absolutely assured, basing his opinion on personal inspection of the company's properties and on the success of the Chartered Company and Liebig's on their ranches. The fears of prolonged droughts in the past, he said, may be overcome by compara-

tively moderate outlay in sinking wells, which will almost invariably provide ample supplies of water. Immune from the difficulties caused by dry seasons, cattle-raising under capable management should prove a highly profitable industry in South Africa.

* * * *

The mining statistics for November which were issued last week, show the total mineral output was valued at £3,570,677, an increase compared with October of £89,947. The principal items were: Gold, £2,760,889, a decrease of £142,122; diamonds, £425,720, an increase of £159,762; coal, £254,962, an increase of £38,045; copper ore, £61,391, an increase of £19,419; tin, £38,139, an increase of £21,659; silver, £13,692, an increase of £18; and other base minerals, £15,884, an increase of £6,824. The Transvaal produced 525,612 tons of coal, an increase of 91,298 on the October output; the Cape 276 tons, an increase of 134; the Free State 57,600 tons, an increase of 2,158; and Natal 98,304 tons, an increase of 19,391. There were 230,695 coloureds engaged in mining throughout the Union, a decrease compared with October of 24,684. The whites employed numbered 31,138, an increase of 366.

* * * *

The report of the Selukwe Columbia G.M. Co. for the year to June 30 last states that all mining operations on the Wonderland mine ceased at the end of March last, from which date it was taken over by the tributers, who have since commenced crushing operations. The machinery and plant have been dismantled and are in course of realisation. The reasons for the cessation by the company of mining operations on its own account were set out in the circular issued to shareholders on February 20 last. During the nine months to March 31 10,451 tons of ore were crushed, yielding 4,953 ozs. gold, value £20,692 and £147 was obtained from slag and matte, making £20,839. Working expenses for same period £20,572, leaving £267 as working profit. The only operation carried out on the Yankee Doodle mine during the year was the treatment of 1,400 tons of tailings by a tributer, from which royalty to the amount of £4 accrued to the company. The net result of the year's operations shows a debit balance of £734; add net loss on realisation of investments, £7,183—£7,917. Deduct balance brought forward £10,307, less dividend No. 4 of 4d. per share (6 $\frac{3}{4}$ per cent.) paid December 17, 1917, £9,350; debit forward, £6,960.

* * * *

Sir Lionel Phillips, the late Controller of the Department for the Development of Mineral Resources in the United Kingdom, in a report to the Minister of Munitions, which was issued recently as a White Paper, favours the setting up of a Mines Department. The following are his recommendations:—

That the Government should, in the public interest, concern itself more actively than hitherto in the mining and mineral industries at home and in the Crown Colonies and Dependencies. That for this purpose it is necessary to organise a Mines Department on suitable lines for the United Kingdom. That in order to secure the full benefit of the Department at least three small qualified bodies acting as Committees or Commissioners should be appointed, and they might be conveniently styled: The Imperial Mineral Resources Bureau—forming a link with the self-governing Dominions; the Mines and Minerals Commission—to watch and foster the interests of the Empire in the output and trade in mineral and metallic products; Commissioners authorised to take action in cases of improper exploitation of properties, or unreasonable or prohibitive conditions imposed by land-owners for royalties and wayleaves. That a fund, to be administered by the Mines Department, and rendered as far as possible self-supporting, should be provided for the purpose of undertaking experimental work in approved directions. That profits spent upon the further development of the properties from which they were derived should be exempted from taxation. That the provision of the Metaliferous Mines Regulation Act of 1872 should be amended and extended where necessary in order to give effect to these recommendations.

Sir Lionel Phillips states that the British Isles have probably been endowed with greater mineral wealth than any area of equal size on the globe. Vast reserves of coal

remain, and beds so far untapped await exploration. Considerable but diminishing quantities of high grade and enormous bodies of lower grade iron ore are available. Limestone, clays, igneous rocks, chalk, sandstone, salt, slates (unrivalled in quality) and various silica sands for moulding, furnace work and glass making, and barytes are abundant. Outside these there are no great known reserves. The tin mining industry of Cornwall, which succeeded that of copper, has been steadily declining, but the great rise in the value of tin has stimulated interest in derelict properties, and the possibility of reviving past activity is attracting the attention of capital. None of the non-ferrous metals, says Sir Lionel, excluding exceptional instances, are likely to be worked at a profit against the competition of the world in normal times unless special action be taken to render them remunerative. Railway rates are excessive and singularly erratically applied. Dumping and unfair competition must be met if the industries are not to be extinguished. The present system of levying royalties on the gross value of the product, irrespective of its net value, is declared to be most illogical, and Sir Lionel considers that royalties should come out of the profits derived from working. In dealing with the establishment of a mines department, the report says that one of the most effective means of countering the German plan for controlling a large part of the world's output would be State support to the metal trade on defined and well-organised lines. The Minister of Munitions in a Note states that he does not accept responsibility for the conclusions arrived at or for the expressions of opinion contained in the report, which must be regarded as a statement of the personal views of the Controller.

* * * *

The list of New Year honours already announced, though doubtless incomplete, as far as South Africa is concerned, is particularly welcome in mining circles. The baronetcy conferred on Sir Abe Bailey is a fitting reward for his many public services to his country. Mr. Newton's knighthood marks the close of a long career of usefulness on the part of the late Treasurer and Acting Administrator of Rhodesia. It is gratifying that Mr. Gurney's sterling worth should be also recognised in similar fashion; and Colonel Hewat by his work in connection with the medical services at the Cape has fully earned the distinction conferred upon him.

* * * *

Speaking last week at the Transvaal Chamber of Mines, the President (Sir Evelyn Wallers) referred to the position of native labour on the mines in a passage that was unfortunately crowded out of our last issue. He said: Since our last meeting the industry has had to face a most serious position, resulting from the epidemic of Spanish influenza, which has played havoc with the native labour position. For some six or eight weeks it resulted in the practical cessation of the recruitment of native labourers in British South African territories; and though the epidemic seems to have run its course in the native territories of British South Africa, and it is hoped that the position so far as it affects them will slowly improve, unfortunately the disease has become manifest in Portuguese territory. It has become necessary, therefore, to suspend recruiting operations with regard to Portuguese natives. It is hoped that the necessity for this suspension will not exist for more than a period of a few weeks. The Portuguese Government in the meantime has agreed to suspend the repatriation of natives to Portuguese territory, with a view to preventing the further spread of the epidemic. The effect of the epidemic on the native labour position cannot be more clearly indicated than by stating that at the end of November some 20,000 less natives were in the service of gold mining companies than at the end of September. The position creates a situation which causes grave anxiety not only from the point of view of the revenue of particular companies, but also from the point of view of affording employment to European workmen.

The report of the directors of the Bushveld Tin Mines, Ltd., for the year ended 30th September, 1918, shows that the capital of the company remains unaltered, viz., 300,000 shares of £1 each, of which 250,000 shares have been issued. The property also remains unchanged and consists of a divided freehold portion of the farm Enkeldoorn No. 373, district Pretoria, in extent 3,219 morgen and 56 square roods. The property is in charge of a caretaker, and, for financial reasons, no serious work to further test the mineral possibilities of the farm has been undertaken during the year. No depreciation has been provided for in the accounts, and it is not proposed to deal with this until the position of the company can be reconstructed. No opportunity for dealing with the company's finances has presented itself during the past year. Small items of plant, etc., not necessary in the event of work being resumed, have been disposed of.

* * * *

Sir Evelyn Walkers, K.B.E., presiding at the annual meeting of the New Modderfontein G.M. Co., before the holidays, referred to the marked progress shown all round, despite the disabilities of the times, and expressed the opinion that the company was fortunate in possessing an extremely sound development and ore reserve position. Including the unappropriated balance from the preceding year, the funds at the company's disposal totalled £1,205,965, out of which two dividends of 15s. and 17s. 6d. absorbed £568,750, taxation £110,706, and capital expenditure, after deducting £62,538 received under the Bewaar-plaatsen Act, £219,765. The unappropriated balance carried forward of £306,744 consisted principally of stores and materials £154,297, and cash £72,667. The new reduction plant cost a great deal more than originally estimated, owing to circumstances beyond control. While this was regrettable, yet the plant was paid for or provided for, and shareholders must view the situation to-day with no small amount of satisfaction, seeing that several years of very valuable time had been gained by following a bold policy, and the company now possessed reduction plants capable of dealing with 100,000 tons of ore per month, which quantity the mine was fully equipped to supply so long as sufficient labour was available. By the end of September the erecting of the winder at the circular shaft was completed and operated from the first fortnight of October, since when the whole equipment had given every satisfaction, and the results achieved had been above anything shown in the past. While the shortage of native labour, due to the Spanish influenza, continued, it would not be possible to operate the two reduction plants to their full capacity. It was, therefore, the intention to work the new plant to the full limit, leaving a spare capacity in the old plant, thus fully testing the possibilities of the new plant and putting the major portion of the tonnage through more up-to-date and efficient plant. The chairman stated that the commitments on capital account would be reduced from now onwards to very small proportions. A dividend for the current half-year of 24s. per share has been declared.

* * * *

We very much regret to have to record the death—self-inflicted—last week of Mr. E. J. Moynihan, consulting engineer, and editor and proprietor of the monthly paper, *The Searchlight*. His depression had been most marked since he had suffered from influenza some time ago. Mr. Moynihan lived for many years on the Rand, and after a close association with mining had, up to a year or two ago, conducted classes for mining, surveying, and mine officials' examinations. More recently he actively associated himself with the promotion of mining ventures, and was closely interested in a manganese proposition at Randfontein. He was full of confidence as to the success of the scheme, and had floated a company with a capital of several thousand pounds.

TOPICS OF THE WEEK.

THE TREASURY REPORT AND THE LOW GRADE MINES.

WE are indebted to Reuter for a summary of the report of the Treasury Committee on the gold question. When the Committee was appointed in October last we wrote: "It is plain that the Rand can hope for little aid as a result of its deliberations," and "the fact that the Committee has come into being at all is doubtless due to the persistency of the efforts of those who represent the gold mining industry in London." Our comment has, unfortunately, proved only too well justified. The Committee, according to the cable, "is not prepared to recommend any bounty or subsidy for the purpose of stimulating the output, as such a measure would be financially unsound. The result of a subsidy would be that the purchasing power of the whole world's gold would be diminished, while the value of commodities for which it was exchanged would rise. The Committee considers that it is desirable that a gold reserve be held, and that the most important function of such a reserve would be its availability for export at a standard price when required to meet foreign indebtedness. 'A gold reserve,' the Committee remarks, 'can only be maintained if the value of our exports exceed or balance the value of our imports. If we want gold and cannot produce it at a profit, we must depend on our capacity to render services and produce at a profit commodities wanted elsewhere by holders of gold, and to do so we must adjust our prices to world prices.' The Committee recommends that steps be taken to control the amount of development work that may be carried out by each mine and the allocation of the available labour forces." In the last recommendation it will be seen that the opinion of the Select Committee of the Union Assembly has been endorsed. That recommendation, of course, is rather in the nature of a counsel of perfection. The main point is that all this wise and excellent advice leaves the low-grade mines exactly as they were before. As Mr. D. Christopherson in his annual report, which makes an opportune appearance this week, puts it: "Those who have read the evidence given before the Select Committee (of the Union Assembly) no doubt look for some explanation as to why certain low-grade mines which were then expected to close down within a short time if relief were not forthcoming have so far been able to continue operations. The explanation is:—(a) That a policy of selective mining has been adopted, particularly in mines where, if once closed down, there would be no hope of re-opening. Admittedly, this is a drastic remedy, and only warranted under the abnormal conditions as now obtain. The future profits of these mines, if they survive the present war conditions, must be dependent on values opened up by current development and on reduction of working costs to such an extent after war as to permit low-grade ore, unpayable under existing conditions, being eventually worked at a profit. (b) On certain of these mines more recent development work has opened up ore of somewhat better value, of which advantage has been taken. (c) The more extended use of the Jack hammer. (d) The constant and unwearying exertions of mine managers and their staffs, and of the consulting engineers and individual members of the various technical staffs, to overcome difficulties, and to find ways and means for meeting the ever-increasing costs. It is evident, however, that there is a limit to all these factors, which have so far enabled many low-grade mines to continue." With the acute labour shortage, the question is whether the limit has not now been reached! There is, of course, still hope that the minor measure of relief referred to by the President of the Chamber of Mines the other day—the rebate of the war freight and insurance charges—may yet be forthcoming. It may fairly be urged that no world-shaking currency question is affected by a measure of such simple justice to a long-suffering industry!

THE WORLD'S GOLD PRODUCTION AND THE TREASURY COMMITTEE'S REPORT.

The Conclusions of the Committee Reviewed—Brief Outline of the Problem Involved—An Unsettled Question.

THE report of the British Treasury Committee on the production of gold within the Empire is probably very different from what was generally expected by the gold producers concerned. It is distinctly depressing from the point of view of the Rand, the leading gold producing centre of the Empire and of the world. The Committee, we understand, is not prepared to recommend any bounty or subsidy for the purpose of stimulating the output, as such a measure would be financially unsound. "The result of a subsidy," they are reported to have declared, "would be that the purchasing power of the whole world's gold would be diminished, while the value of commodities for which it was exchanged would rise." There are two schools of thought among those who study the economics of money; one of them argues that there is not enough gold current in the world; the other affirms that there is so much that any important increase—such, for instance, as that which has been in progress from year to year during the present century—is likely to depress the value, or purchasing price, of the accumulated gold, to a material extent. The Treasury Committee apparently holds the latter view. The question has been discussed at considerable length in gold countries for some time past, and particularly, of course, since the beginning of the war. In many of the discussions it has been made evident that a leading economist, Stanley Jevons, if memory serves us well, was speaking truly when he said that a contemplation of these money problems often resulted in "intellectual vertigo." However that may be, the outstanding and clearly defined points of difference between the debaters are those briefly referred to above. On the Rand these points have been argued from different sides, as elsewhere. In an interesting paper which was read by Mr. Alex. Aiken before the South African Institution of Engineers, in August last, the author dealt with the theory of value with regard to money, and took occasion to combat what is known as the "quantity theory" of the relative value of money. If this theory were true, he remarked, "there is no avoiding the deduction that the high prices of commodities, and the excessive costs of mining to-day are due mainly, if not entirely, to the quantity of gold put out; that therefore, the only way to lower costs and prices would be to shut down a number of mines and create a scarcity of gold sufficient to appreciate its exchangeable power. Now, these conclusions follow from the causative use of the quantity theory. It is invariably implied that the cause of a change in general prices and values is a change in the quantity of the money unit. But the theory of value I have very sketchily outlined leads to no such conclusion. The quantity of the money unit is, according to this theory, only one influence among many making for value, and the absolute changes in the quantity of gold produced in our experience are unlikely to exert any great influence on its value in comparison with the many other influences which have already been indicated. There are valid reasons for believing that the absolute value of gold is highly stable, that it has an elastic power of resistance to depreciation. The money use of gold adds to the value of the metal."

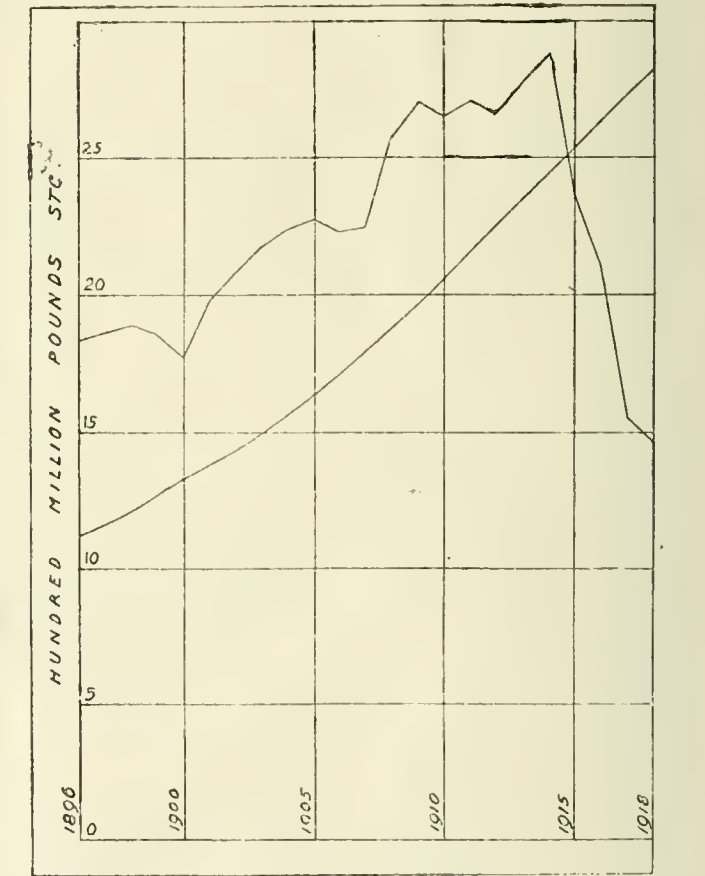
PURCHASING CAPACITY OF GOLD.

Space does not permit, unfortunately, of an extended discussion of Mr. Aiken's very lucid and cogent arguments. The other side of the question has been indicated, rather than actually affirmed, by Professor R. A. Lehfeldt, of the South African School of Mines and Technology. In a paper which he wrote a little time ago, on "Gold Production," he tabulated the following figures which show the secular variation in the purchasing price of gold as deduced from the average prices, during a course of years, of various essential commodities. They are apparently based on what

are known as "Sauerbeck's figures," in which the average of the prices of some 45 commodities for the eleven years 1867-77 is taken as the unit, or 100.

Year.	Value of gold.	Year.	Value of gold.
1896	164	1907	125
1897	161	1908	137
1898	156	1909	135
1899	147	1910	128
1900	133	1911	125
1901	143	1912	118
1902	145	1913	118
1903	145	1914	118
1904	143	1915	93
1905	139	1916	80
1906	130	—	—

In its issue of October 19th last, *The Statist* gave a table showing the index number, or average price number, of these commodities for some years, in which it was shown



that the index number for 1917 was 174, while for the first nine months of 1918 it was 191. On the basis of these figures the value of gold for the same periods was 57 and 52 respectively. In commenting upon these figures Professor Lehfeldt said: "The changes in value are not so rapid as with most commodities. A similar table for beef or for coal would show more violent ups and downs; but that is because there is an enormous stock of gold in existence. There is some 20 years' supply on hand. Pouring new gold into so vast a reservoir naturally makes less difference to its level than if the demand had to be met from the year to year's supply, as is the case with most commodities. But the effect, though slow, is cumulative;

you cannot go on pouring a stream into a reservoir, however large, without affecting it in time. Moreover, when the mechanism for turning out the stream of gold is once set up it keeps on acting for a long time; so that when a fall in value is once under weigh it is not quickly stopped."

THE GOLD RESERVOIR.

In view of what has been said so far, it will be interesting to enquire how great is this "vast reservoir" of gold, the filling of which is said by some to be accompanied by marked changes in the value of money. It is rather a difficult question to answer, with any degree of accuracy, because the information at hand is of a doubtful and quite insufficient kind. Compilations have been made at different times by careful students of the problem. In his presidential address which was delivered before the members of the Institution of Mining and Metallurgy, in London, in 1913, Mr. Bedford McNeill dealt with the subject of the increase of the world's production of metals, and made the following reference to gold: "Taking gold first, for the 108 years from 1493 to 1600, the average annual production was a little under a quarter of a million ounces. Taking the next 100 years, from 1601 to 1700, this figure approximated to a little less than one-third of a million ounces; for the next sixty years, 1701 to 1760, the output approximated to two-thirds of a million ounces. From the earliest date (1493) until 1840, there is only a gradual rise in production, but from 1841 onwards the increase markedly sets in. The discovery of gold in California was in 1848, and in Australia in 1851, and the effect of these two discoveries is shown in the output for the next forty years: From 1851 to 1860 the average annual output was 6.4 million ounces; from 1861 to 1870, 6.1 million ounces; from 1871 to 1880, 5.6 million ounces; from 1881 to 1890, 5.1 million ounces. This latter date brings us to the starting of the Transvaal output in 1889, which owes so much to the simultaneous successful application of the cyanide process. We now get an enormous acceleration in output, and in 1911 the total output reported of the world was 22½ million ounces. In other words, the world's present average production in one year is now equal to more than the total production for the sixty years preceding the year 1700. Another way of bringing the gold production vividly before you is the statement that it is estimated that 653 millions sterling was added to the world's stock of gold for the 358 years from 1493 to 1850, whereas for the eleven years alone of this present century, that figure of 653 millions sterling has already been exceeded by the output of 867 millions sterling. Or, again, there has been added to the world's stock of gold during the last fifteen years a quantity greater than the total amount previously known to exist in the civilised world. It is most extraordinary that the gold which is produced under circumstances demanding the highest technical skill, and in the obtaining of which the greatest care is lavished, and for which so many men risk so much, should be destined ultimately to be buried and hidden out of sight, and, as far as we can judge, ruled out of any economic calculations, at any rate for the time being. I need not remind you that the use of gold in a civilised community is not merely, as it were, for itself, but as serving the foundation for an enormous superstructure of credit; and unless, therefore, this absorption of gold can be controlled or directed into channels in accordance with modern conditions, the embarrasment of the more civilised communities, as we regard ourselves, is going, I fear, to become more and more accentuated. It is only fair to mention there are some who argue that this disappearance of gold is the least of several evils, and if it did not so disappear much greater troubles would ensue." The position, thus described, is summarized in the table below:—

Period.	Number of Years.	Gold.	
		Millions of Ounces.	Value in Millions Sterling.
1493—1660	168	41	£173
1661—1850	190	113	480
1851—1900	50	334	1,400
1901—1911	11	205½	867
	419	693½	£2,920

The interesting table which is published from time to time by *The Statist*, in which the annual gold production of the world is shown diagrammatically is, of course, well known. Tables of this kind, however, fail to give any distinct idea of the quantity of gold that is being accumulated, year by year, as a result of this annual production. According to the figures given just above, there was accumulated to the end of the year 1850, some 480 million pounds sterling. A summary of the outputs since that date, to the end of 1917, show that an additional quantity of gold to the value of about £2,816,714,000 has been added to the stock.

THE QUANTITY THEORY.

The accompanying diagram is intended to represent this gradual accumulation of gold, and to show how the value of the gold has varied from time to time, with respect to the quantity of commodities that could be purchased by the money equivalent of the metal. The lower curve shows the rise in the stock of gold while the upper one shows the value of this gold in accordance with Professor Lehfeldt's figures and those of *The Statist*. It may be explained that the starting point of the lower curve is at the year 1850. If the actual quantity of gold produced, as quoted by Mr. McNeill, were included, the height of the curve would be higher by 480 millions sterling, or a little less than one of the horizontal spaces. When allowance is made for wastage, however, the curve as actually shown is probably sufficiently near the truth for our purpose. In any case the upper curve represents the variation in purchasing capacity of the quantity of gold actually produced during the period 1850—1918. It will be seen at a glance that the curves have very little relation to each other in this connection. In a word there seems to be nothing whatever to indicate that the irregularities of the upper curve have anything to do with the progress of the lower one. Take, for instance, the most striking drop of all, that between 1914 and 1918. It would be absurd to say that the one is related to the other in any way at all. Probably no one would wish to argue in that way, but, leaving this period out of the question, is there any reason for assuming a relationship during the other periods? If there be any at all it might reasonably be taken over the whole period 1896 to 1914 during which there is a gradual lowering of the whole upper curve. That is to say, while £1,121,000,000 was worth in purchasing power about £1,838,000,000 in 1896, £2,447,000,000 in 1914 were worth in the same way only about £2,887,000,000 a falling off to the extent of some 28 per cent. in value, while the quantity of the metal had increased by nearly 119 per cent. The comparative fall in value was not nearly as excessive as might have been expected if the quantity theory is true. There are, as Mr. Aiken insists in his paper above referred to, other factors to be considered which have little or nothing to do with the quantity of gold that is produced from year to year, even if wars are left out of consideration. It will be interesting to learn the grounds upon which the Treasury Committee has based its conclusions, but if figures, such as those we have plotted, go for anything it would seem that their economic views, however convincing they may be to themselves, need not be taken as a solution of the very intricate and important problem that has been a subject of profound differences of opinion for many years.

The further information which is to hand since the above was written, does not enlighten us much with regard to the views of the Treasury Committee concerning the problem which has just been briefly set forth. "The intention of a subsidy," says the report, "as suggested by the gold producers, is to enable gold to be produced which otherwise would not, conformably with the laws of supply and demand, be produced at all. Other things being equal, the result would be that the purchasing power of the world's gold would be diminished, *pro tanto*. The value, in terms of gold, of commodities for which it is exchanged would rise." Whether it was wise to refuse the kind of assistance that was asked by the actual producers of gold is a matter that does not fall to be discussed here. With regard to the "quantity theory" of the Treasury Committee it need only be said that the assumption of "other things being equal" is one that confuses and distorts the whole question.

POINTS FROM THE GOLDFIELDS' ANNUAL REPORTS.

Review of the Rand Industry by the Manager and the Consulting Engineer.

THE reports of the manager and the consulting engineer of the Consolidated Gold Fields of South Africa, Ltd., for the year to June 30 last are now available, and we make some extracts therefrom.

MR. CHRISTOPHERSON'S REPORT.

The manager, Mr. Douglas Christopherson, in his report, says: In view of the European war having continued for over four years, and while the gold mining industry has suffered severely during that period in consequence of the disabilities and burdens thereby created, it is nevertheless satisfactory, in presenting the report for the year ended June 30 last, to be able to record that, despite the many adverse conditions which have prevailed, and still continue in a more accentuated form, the operations of the industry as a whole have been maintained, an accomplishment which has not only been of inestimable value to the Imperial and Union Governments, but of undoubted benefit to the whole community of South Africa. The outputs of, and the native labour employed on, the Witwatersrand gold mines for the past four years have been as under:—

For the year ended July 31.	Tons milled.	Gold output. Fine oz.	Value.	Natives emp'd.
1915 ...	27,283,176	8,394,573	£35,657,879	178,729
1916 ...	28,754,982	8,971,282	38,107,584	205,374
1917 ...	28,190,501	8,893,138	37,775,648	191,938
1918 ...	26,013,428	8,409,603	35,721,720	179,016

During the 1916 and 1917 periods, when the output was higher than 1915 by some 500,000 fine ounces, there was a greater native labour force available. In these four years the Transvaal has produced an average of close on 9,000,000 ozs. of fine gold annually, or a total for the war period of 35,968,462 ozs. fine gold, value £152,784,310, all of which was disposed of to the Bank of England—a matter of great importance to the Imperial Government. In July, 1914, 13 Witwatersrand companies were making a working profit of 5s. or less per ton crushed, whereas to-day 31 companies come under that category; that is to say, that three-fifths of them, milling 63·2 per cent. of the total tonnage, and producing over 50 per cent. of the total gold output of the Rand, are making a gross profit of only 2s. 3d. per ton; and as from this low margin of working profit payments have to be made for miners' phthisis levies, debenture interest and redemption, taxation charges, capital expenditure, etc., it will be realised how precarious is the position of many of these companies.

Mr. Christopherson goes on to discuss the question of the low-grade mines—his remarks under this head are dealt with elsewhere—and continues: In last year's report mention was made of the importance of the Far East Rand gold mining companies in maintaining the gold production. Reference was also made to the phenomenal increase in the profits of such mines—namely, that (including the older Far East Rand companies) they contributed in July, 1917, 48 per cent. of the profits of the Witwatersrand gold mines as against only 20 per cent. in July, 1914. It is interesting

to note that these mines (11 in all) now contribute 59·7 per cent. of the profits, as against only 40·3 per cent. by the remaining 38 companies. The stronger position of the richer Far East Rand mines to meet present conditions, as compared with the rest of the Witwatersrand, is seen from the fact that, owing to extended operations with larger tonnages, working costs of the Far East Rand companies for June, 1918 (in spite of the ever-increasing cost of stores and other disabilities) increased by only 3s. 2d. per ton over July, 1914 (20s. 5d., against 17s. 3d.), while the revenue increased by 6s. 6d. per ton (36s. 8d., against 30s. 2d.); so that, notwithstanding the adverse conditions, the profit increased by 3s. 4d. per ton (16s. 3d., against 12s. 11d.). In the case of the other mines of the Witwatersrand, however, the revenue per ton was precisely the same in both periods, viz., 25s. 1d., whereas working costs increased by 4s. 8d. (21s. 4d., against 16s. 8d.). Consequently their profits decreased from 8s. 5d. per ton in July, 1914, to 3s. 9d. per ton in June, 1918—a falling off of 4s. 8d. per ton, or nearly 56 per cent. The dividends declared for the 1918 period amounted to £6,022,369, as against £7,985,437 for the 1914 period, or a decrease of nearly £2,000,000. The actual results of operations on our own group of mines show that the decrease in profit over the previous twelve months was 1s. 1·471d. per ton milled. As a matter of fact, however, the profit during the twelve months immediately prior to the outbreak of war was 5s. 6d., as against 2s. 9d. per ton for the past twelve months, or a decrease of 50 per cent. Therefore, though the revenue was 21s. 0·977d. for the year ended June 30, 1918, as against 19s. 5·627d. for the year ended July 31, 1914 (an improvement of 1s. 7·350d.), working costs increased by 4s. 4·922d. per ton. Otherwise, had it not been for war conditions and other disabilities, the results would have compared favourably with pre-war days. Apart from the increasing cost of production and other disadvantages, results have been adversely affected during the past year by the continued shortage of native labour, the average number of natives employed by our group underground being 16,553, equal to 73·99 per cent. only of the underground complement, and compares with 82·49 per cent. for the previous year. As further indicating the serious effect of war conditions upon the low-grade mines of our group, the following figures are given (for the twelve months ended June 30, 1918): Tons milled: Knights Deep, 1,145,700; Simmer Deep, 541,000; Jupiter, 276,200; working profit, after deducting all expenses consequent on war conditions: Knights Deep, £6,372; Simmer Deep, £9,366; Jupiter, £20,326; equal for the three companies to a total gross working profit for the year of £36,064. The war expenses paid were: (1) Increased gold realisation charges, £10,055; (2) amounts paid in war bonus, £25,493; (3) increased prices paid for stores, £151,865; (4) allowances to men on active service and to their dependents, £17,750; total, £205,163. Therefore, if war conditions had not prevailed, these companies, instead of making a gross working profit of only £36,064, would have made at least £241,227, without taking into consideration other disadvantages due to war as well as additional burdens placed upon the mining industry. It is of interest to state that while the cost of stores in respect of our group of mines for the year ended July 31, 1914, was 4s. 3d. per ton milled, for the years ended June 30, 1917 and 1918, it was 5s. 8d. and 6s. 5d. respectively, despite the close attention and keen discretion exercised by our engineering and buying departments and strict economy on the part of mine staffs. The work of the central buying department established by the Chamber of Mines in connection with the pooling of mine supplies, and in which we are represented by our consulting mechanical engineer, Mr. A. C. Holtby, has proved, under the guidance of the Advisory Technical Committee appointed to act in conjunction with it, of great benefit to the industry. Not only is the work of this Committee extremely valuable under existing conditions, but the results of its investigations will

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be of great benefit hereafter, enabling considerable savings to be made in various directions. Perhaps one of the most valuable results will be the standardisation of certain lines of stores and material. The working costs of our group of mines for the past year were 18s. 4d., as against 20s. 2d., per ton crushed for the whole of the Witwatersrand, thus indicating capable and economical management; and in this connection a meed of praise is due to our engineers and mine managers, as well as to their respective staffs, for their zeal and efficiency.

Southern Van Ryn Reef G.M. Co., Ltd.: During the year the Gold Fields were offered and, together with associates, subscribed 50,000 shares in this company, and also have options on further shares. The sinking of two boreholes on the property is being proceeded with in order to determine the best sites for vertical shafts, after which every effort will be made to bring the property to a producing stage as soon as possible. This must necessarily be dependent on the requisite material and equipment being available. Mr. Leslie, the consulting engineer, is of the opinion that there is every reason to think that this will prove a most valuable mining proposition.

THE CONSULTING ENGINEER'S REPORT.

Mr. C. D. Leslie (the consulting engineer), in the course of his report, says:—During the period the mines of this group milled 3,329,180 tons of ore, yielding gold to the value of £3,509,510, of which £3,054,909, or 87 per cent., was absorbed by working costs, leaving £454,601, or 13 per cent., as working profit. The corresponding figures for the preceding year were 3,683,180 tons milled, yielding gold to the value of £3,755,830, of which working costs absorbed £3,046,211, equal to 81.1 per cent., leaving £709,619, equal to 18.9 per cent., as working profit. The decreased output for the year in gold, valued at £246,300, is in itself a serious matter. The average revenue per ton was 21s. 0.977d., as compared with 20s. 4.734d. for the preceding year, and the average working costs were 18s. 4.208d., as compared with 16s. 6.494d., the average working profit per ton being 2s. 8.769d., and 3s. 10.240d., or a decrease of 1s. 1.471d., equal to 29 per cent. per ton milled. The expenditure on renewals of plant not included in working costs was £23,415 0s. 2d., equal to 1.688d. per ton milled. To appreciate the change since war started a comparison of the last two years' figures is not sufficient, and it has to be shown that over the last four years there has been a gradual increase in working costs on the mines of this group, which has now reached an amount of 4s. 5d. per ton milled, equal to £735,000 on the tonnage milled for the year under review. Most of the year's increase in working costs of 1s. 9.714d. per ton milled is accounted for by the greater cost of mine supplies, amounting to 7.863d. per ton milled, being equal to

£109,082, the higher wages bill, and a reduction of 353,700 tons milled. Further disabilities were imposed by an abnormal rainfall of about double the quantity of previous years, which resulted in flooding of mine workings, with consequent hindrance of operations, and by an increase of 3.261d. per ton milled, equal to £45,239, for support of mine workings. In respect of the latter item, a decrease in cost is scarcely to be expected. The lower tonnage is a direct result of reduced hours of labour as from January 1, 1918, since which time there has been a decline in the output per underground native affected by the shorter working hours of 12.52 per cent., equivalent to a loss of one and a half month's tonnage per annum with the same underground native strength. By this falling off the prevailing shortage of native labour is rendered much more acute, and working costs are increased in every direction, resulting in a greatly reduced tonnage per annum multiplied by a smaller profit per ton. As an example of this position, whereby more labour is employed for the same amount of work, it may be stated that, while white wages are higher than last year by 1s. 2d. per shift, involving an additional expenditure of £52,959, equal to 3.817d. per ton milled, the actual increase in white wages, due to more daily pay plus lower efficiency, amounts to 11.422d. per ton milled, or £158,435. Similarly, while native wages are higher than last year by 0.294d. per shift, equal to £7,535, or 0.543d. per ton milled, the actual increase amounts to 2.779d. per ton milled, being an additional expenditure of £38,553. The reduced hours of labour, including the short Saturday shift, which is worked at a loss on mines with a small margin of profit, have seriously jeopardised the position of the low-grade mines. For the period of the war a voluntary reversion on the part of employees of mines in imminent danger of closing down, to the forty-eight hours' week "face to face," obtaining until December 31, 1917, would help very appreciably in relieving the situation. The proportion of each shift actually absorbed in the main operation of drilling with machines or hammer boys is seriously curtailed through loss of time in getting to and from working places and in preparation for drilling and blasting. During the last twelve months 14 mines on the Witwatersrand, employing over 5,000 white employees and 36,000 natives, and distributing in working costs an amount of £6,073,000, made a working profit of £182,755, equal to 8d. per ton milled. For the first half of the period the profit was £118,709, or 11d. per ton milled, and for the second half of the period £34,046, or 3d. per ton milled. During the second half of the period, when reduced working hours were in force, the average output per underground native was lower by 10.54 per cent., equivalent to one and a quarter month's tonnage per annum. If our gold mining industry is to continue to be penalised at the rate obtaining during the last year, the working expenditure on several of these fourteen mines, which include Knights Deep, Simmer Deep, and Jupiter, would be expected shortly to exceed their revenue.

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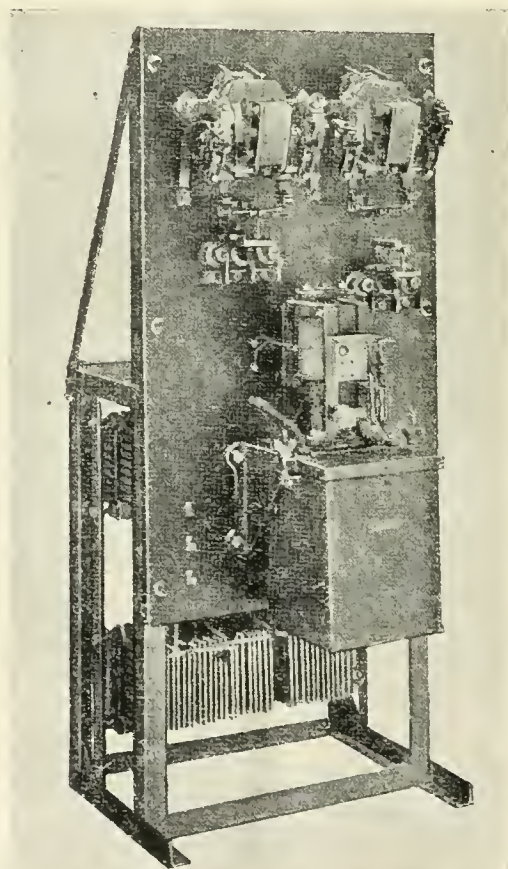
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Special Mission to This Country—Important Working Alliances.

DURING the week we have been privileged to interview two gentlemen now visiting the Rand on a momentous mission, the aim and purport of which we have much pleasure in putting before our readers. Much has been said and written since 1914 about the necessity of British manufacturers combining for export trade, if they intend to make any serious competition against the highly-organised and efficiently-directed German overseas trusts. It has remained for Messrs. Siemens Brothers & Co., Ltd., of London, to take the lead in this movement, and there is now in this country a mission which has been sent here by that firm (1) to make clear the change in the nationality of the firm, (2) to notify the enlargement of the scope of the company's business, which dates back over half a century, and (3) to make known the conclusion by the company of industrial alliances in various directions. Incidentally, the mission is studying here and elsewhere the possibilities of electrical engineering, as well as the scope of the market for electrical plant and materials of all kinds. This mission is composed of Mr. Walter B. Hopkins and Mr. F. H. Leonard, of Siemens Brothers & Co., Ltd., of London.

OUSTING GERMAN TRADE.

Several years ago German interests obtained financial control of Siemens Brothers & Co., Ltd., of London, and worked it as a subsidiary company of Siemens & Halske, of Berlin, the firm which controlled the well-known firm of Siemens-Schuckertwerke. The British Government has, however, eliminated all German interests from the firm, and being now purely British in every department it has started out with the intention of capturing the field from its former controllers. It is particularly noteworthy, in this connection, that by Clause 4 of the Articles of Association of Siemens Brothers & Co., Ltd., which was inserted pursuant to the Companies (Foreign Interests) Act of 1917, it is rendered impossible for its shares to pass into the hands of either Germans or other foreigners. Our readers will recall that at the outset of the war Siemens, Ltd., who represented the London firm in this country, went into liquidation.

The first step of the newly-appointed board in London, was to make a working arrangement with Dick, Kerr & Co., the electrical contractors, who had already acquired the well-known firm of Willans & Robinson, and who were also associated with the Phoenix Dynamo Co., and manufacture has been so distributed that between them these firms will be able to deal with contracts for all descriptions and sizes of electrical plant, including telegraphs and telephones. The joint designing office for electrical plant is now at work. In this way the cost of manufacture should be materially cheapened, thus enabling the firms to compete advantageously in the export field. It may be remarked here that Siemens Brothers have important contracts for automatic telephones for the British Government and other telephone services.

OBJECTS OF PRESENT MISSION.

As far as export business is concerned, the selling end of the business will be handled by representatives appointed by the associated firms, and the mission now here is charged with reporting on the most feasible method of establishing these in accord with local conditions. By this means duplication of representatives is avoided—a form of wasted effort very common in the past. Siemens Brothers & Co., Ltd., erected the first telegraph lines in Cape Colony 55 years ago, and have constantly supplied such material to the South African Governments since that time. They hope that now that the German influence has been eliminated they will be able greatly to extend this field of electrical enterprise throughout the whole of South Africa. Mr. Hopkins and Mr. Leonard have expressed their

conviction that this working alliance of such powerful electrical industries under the protection and consent of the British Government will enable them to secure a large share of the many installations of electrical plant that will undoubtedly be wanted in the near future. Both also expressed themselves as greatly pleased with the co-operation they had been accorded by the British Trade Commissioner for South Africa, Mr. J. L. Wilson Goode. They expressed the opinion that if British Government officers continue to co-operate as heartily with all British industrial representatives as they have with them, it will be a long step towards beating the Germans who, before the war, were already well established in South Africa. Both gentlemen also voiced their warm appreciation of the kindness and sympathy with which they had been everywhere met throughout South Africa. They leave shortly for India and the East, in continuation of their trip round the world. In their tour round South Africa, Mr. Hopkins and Mr. Leonard are accompanied by Mr. A. J. G. Simpson, representative in South Africa for Messrs. Siemens Brothers & Co., Ltd.

FURTHER IMPORTANT DEVELOPMENTS.

From the report of the annual meeting of Messrs. Dick, Kerr & Co., Ltd., to hand last week, we gather that some further important developments are taking place in this direction. We notice that the chairman of Messrs. Dick, Kerr & Co., Ltd., Mr. Claud T. Cayley, presiding at the annual meeting, said that an alliance had been made with Siemens Brothers & Co., Ltd., by which it was thought much economy could be attained through the amalgamation of selling organisations and co-ordination of designs and products so as to avoid overlapping. Siemens and themselves were not competitors in manufacture. They were long established as makers of all kinds of cables, from submarine telegraph to power transmission, dynamo machinery, telephones, instruments, and so on, while they had specialised in apparatus for railways and tramways, steam turbines, and the larger classes of electrical machinery. The two manufacturing organisations dovetailed into each other perfectly, and only small adjustment was required to bring the commercial sides together with material benefit to both. This arrangement was referred to by Mr. Mure Ritchie, the chairman of Siemens Brothers, Ltd., in his speech to the shareholders of that company in June last, and it had now been consummated by an exchange of directors, Mr. Mure Ritchie having taken a seat on their board, and he (the speaker) having joined that of Messrs. Siemens. An interesting development which had taken place since the last meeting was the establishment in France

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and in Japan of companies to exploit their manufacturing rights in connection with apparatus for railways and tramways. It must be gratifying to them to know that Dick-Kerr machinery ranked so highly in these important countries that representative technical and business men were willing to provide the considerable capital required for such undertakings. It had further been brought home to the management that the manufacturing capacity of the country for heavy electrical machinery was much below the demand, and that in their own case they must, if they wished to retain the position they held at present, find facilities not only for increased output, but also for the production of individual units larger than their present shops admitted of. Having reached that conclusion, they were faced with the difficulty, if not impossibility, at all events for a long time to come, of extending the works, obtaining the necessary machinery, and building up a strong organisation. It was therefore with pleasure he had to inform them that they had solved the difficulty in a very satisfactory manner. An option agreement had been entered into with the Coventry Ordnance Works, Ltd., who owned an engineering works of modern design and equipment which, although not at present occupied upon electrical work, could very quickly be converted to that purpose. The Coventry Ordnance Works, Ltd., which was not a public company, had an issued capital of £800,000, and debentures of £600,000. Its proprietors were Messrs. John Brown & Co., Ltd., Messrs. Cammell, Laird & Co., Ltd., and Messrs. Fairfield Shipbuilding and Engineering Co., Ltd. The shops were laid down for the purpose of making heavy armament, and could be easily altered for the production of heavy electrical machinery.

SOME OF THE SIEMENS PRODUCTS.

In conclusion we may add that Messrs. Siemens Brothers & Co., Ltd., have at present three large manufacturing establishments in England. The works which began their activities in 1858 are situated at Woolwich, and

it is here that the company produces cables of all kinds for electric light and power, for telegraph, telephone and other purposes, besides all types suitable for submarine, subterranean and aerial work, telegraph apparatus of all descriptions—such as the well-known Morse, Wheatstone, Hughes and Baudot systems—telephone exchanges of all sizes, of both manual and automatic types, and all the accessory apparatus for subscribers. They also manufacture many other forms of apparatus for various purposes, such as signalling apparatus for use on board warships, searchlight projectors, loud-speaking telephones for ships and mines, wireless telegraph apparatus, and others too numerous to mention. At the Woolwich works are produced also all kinds of telegraph and telephone line material and electric batteries; the output of dry cells having assumed enormous proportions. The dynamo side of the company's business is carried on in large works at Stafford, where generators and motors are made in all sizes up to units of no less than 25,000 horse-power, and the company are now manufacturing two reversing rolling mill plants, each having a capacity of approximately 20,000 horse-power. They also construct the powerful machinery required for electric winding equipments for mines, motors for textile factories, turbo generators, rotary converters, transformers, switchboards and switchgear of all kinds for high and low tension working. At the Stafford works are also manufactured electric ventilating fans, motor driven ash hoists, crane motors and other machines of a special character and large numbers of these have been supplied to the British and other navies and to the mercantile marine. In these works are also made the well-known "Z" fuses, of which large quantities are used in South Africa. The third manufacturing establishment is at Dalston, in London, and this is exclusively engaged in the manufacture of metal filament lamps in very large quantities.



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THE 1919 DIVIDEND LIST IN DETAIL.

Rand and Outside Gold Mining Declarations for Two Years Compared—Rand Decline, £1,225,222—Far East Increase and Central Rand Falling Off.

RAND CRUSHING COMPANIES.

The following tables show the dividends declared by Rand and "outside" districts gold mining companies for the year, together with those for the six months ended 30th June and for last year:

COMPANY.	Date.	Rate per cent.	Capital. £	Amount. £	This year. Rate p.c.	Last year. Rate p.c.
Brakpan Mines	June	20	£791,100	£158,220	32½	47½
	Dec.	12½		98,887		
City Deep	June	20	1,250,000	250,000	27½	45
	Dec.	7½		93,750		
City & Suburban	June	17½	1,360,000	25,500	1½	10
Con. Langlaagte	Dec.	5	950,000	47,500	5	17½
	Jan.	*	1,247,602	54,299		
Con. Main Reef	June	3½		46,785		
	Dec.	2½		31,190		5
Crown Mines	June	15	940,106	141,016	20	40
	Dec.	5		47,005		
Durban Roodepoort	—	—	125,000	—		15
Durban Road. Deep	June	2½	440,000	11,000	2½	5
Ferreira Deep	Mar.	11½	950,000	110,250		
	Sept.	11½		110,250	22½	28½
Geldenhuis Deep	June	5	585,753	29,287	7½	20
	Dec.	2½		14,644		
Ginsberg	—	—	210,000	—		10
Glencairn	Dec.	5	550,000	27,500	5	—
Gov'tment G.M. Areas	June	12½	1,400,000	175,000	27½	12½
	Dec.	15		210,000		
Geduld Proprietary	June	5	970,000	48,500	11½	10
	Dec.	+6½	1,150,000	71,875		
Jupiter	Dec.	1½	1,014,200	12,677	1½	7½
Knights Deep	—	—	743,526	—		5
Langlaagte Estate	June	5	886,500	44,325	12½	10
	Dec.	7½		66,488		
Meyer & Charlton	June	50	200,000	100,000		
	Dec.	50		100,000		
	Bonus	10		20,000	110	110
Modder B.	June	42½	700,000	297,500	82½	85
	Dec.	40		280,000		
Modder Deep	June	47½	500,000	237,500	97½	85
	Dec.	50		250,000		
New Goch	—	—	550,000	—		7½
New Heriot	—	—	115,000	—		55
New Kleinfontein	—	—	1,151,540	—		5

COMPANY.	Date.	Rate per cent.	Capital. £	Amount. £	This year. Rate p.c.	Last year. Rate p.c.
New Modderfontein	June	21½	1,400,000	306,250	51½	35
	Dec.	30		420,000		5
New Primrose	—	—	325,000	—		
New Unified	June	5	250,000	12,500	10	15
	Dec.	5		12,500		
Nourse Mines	June	3½	827,821	31,043	3½	12½
Robinson	June	1½	2,750,000	41,250	2½	7½
	Dec.	1		27,500		
Robinson Deep	June	2s. per "A" Share		50,000	—	—
Rose Deep	June	10	700,000	70,000	17½	30
	Dec.	7½		52,500		
Simmer & Jack	June	1½	3,000,000	37,500	1½	6½
Springs Mines	June	10	1,150,000	115,000		
	Dec.	12½	1,153,500	144,185	22½	—
Van Ryn	June	5	500,000	25,000	10	30
	Dec.	5		25,000		
Van Ryn Deep	June	22½	1,196,892	269,300	45	42½
	Dec.	22½		269,300		
Village Deep	June	3½	1,060,671	39,775	3½	16½
Village Main Reef	June	10	472,000	47,200	10	20
Witwatersrand	June	10	469,625	46,962	15	35
	Dec.	5		23,481		
Wit. Deep	—	—	550,000	—		5
Wolluter	April	3½	860,000	32,250	6½	11½
	Oct.	2½		21,500		
Totals				£5,330,966		

* Declared in January in respect of operations in 1917, 5 per cent. on Consolidated Main Reef old capital of £924,364. 2½ per cent. on £323,238 issued for Main Reef West assets. † Payable about end February.

"OUTSIDE" DISTRICTS.

Glynn's Lydenburg	Jan.	8½	£170,000	£14,875	16½	20
	July	7½		12,750		
Sub Nigel	June	6½	£775,000	36,666	11½	15
	Dec.	5		27,500		
Transvaal G.M. Estate	Mar.	3½	604,225	22,658	6½	10
	Sept.	2½		15,106		
Totals				£129,555		

† 475,000 shares fully paid, and 300,000 shares partly paid up.

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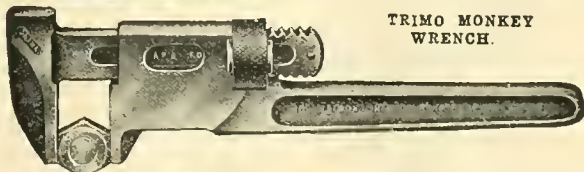
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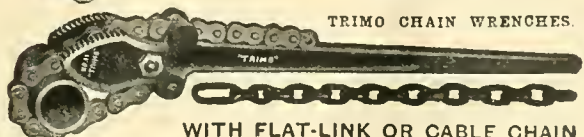
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THE WEEK IN THE SHAREMARKET.

A Quiet Time—Hopeful Anticipations—Shares ex Dividend.

On Saturday morning business was limited, for the third time in succession, to a dozen sales. Prices were practically unchanged. After the call Modder Easts came the turn harder. On Monday morning Anglo-Americans, which had come to life again on Saturday, improved still further. Modder Bs. and Modder Deeps both recorded an advance. Modder Easts made another small advance and subsequently were buyers at 18s. 6d. The options remained at about the old figure. Tuesday's call was practically a record for inactivity, only three sales being recorded. Government Areas were weaker, otherwise there was no change worth noting. Wednesday and Thursday were holidays. On Friday morning before the call, the chairman addressed the members. After dealing with the questions of cable and telegraphic delays, he mentioned the efforts that were being made to re-establish business with London on pre-war conditions. He next dealt with the position of the Stock Exchange, which was eminently satisfactory from the reduction of liabilities to the increase of dividend on the proprietary shares. He anticipated a renewal of prosperity during the present year. At the call most of the stocks were quoted *ex* dividend, but taking the necessary deductions into consideration prices were satisfactory. Very little business was put through and mostly in lower-priced goods. The dealing in outside stocks during the week was practically nil.

	Tues., 24th.	Fri., 27th.	Sat., 28th.	Mon., 30th.	Tues., 31st.
African Farms	15 4	15 4*	15 3*	15 3*	15 3*
Anglo-Amer. Corp.	27 6*	—	31 0*	31 6	32 0*
Apex Mines	7 9†	7 3*	7 3*	7 9†	7 9†
Aurora Wests	8 6*	—	8 6*	8 6*	—
Bantjes Consolidated	2 3*	2 0*	2 1*	2 1*	2 1*
Brakpan Mines	70 0†	70 0†	69 0†	68 6†	66 0*
Breyten Collieries	11 6*	11 6*	11 6*	11 6*	11 9*
Brick & Potteries	4 0*	3 9*	4 0*	4 0*	4 0*
British South Africa	20 6*	—	20 6*	20 0*	20 0*
Bushveld Tins	0 8*	0 8*	0 8*	0 8*	0 8*
Cassel Coals	—	38 6†	38 6†	38 6†	—
Cinderella Cons.	5 0*	5 0*	—	—	—
City & Suburbans	7 9*	7 9*	7 9*	7 9	7 6*
City Deeps	46 0	—	45 0*	45 0*	45 3*
Clydesdale Collieries	22 6*	22 6*	24 0	24 0†	24 0†
Con. Investments	—	20 0*	21 0*	22 0*	22 0*
Con. Langlaagtes	18 6*	18 6*	18 3*	18 3*	18 3*
Con. Main Reefs	11 6*	11 6*	11 7*	11 9*	11 9*
Con. Mines Selection	24 0*	21 0*	24 0*	—	24 6*
Coronation Collieries	—	—	—	48 6*	50 0*
Coronation Freeholds	1 3*	1 3*	1 0*	1 0*	1 0*
Coronation Syndicates	—	—	—	—	2 0†
Crown Diamonds	3 0*	5 0*	—	4 0*	4 0*
Crown Mines Deb.	£100*	—	£100*	£100*	—
Daggafontein Mines	24 0*	23 6*	23 0*	23 0*	23 0*
Do. Options	6 3†	6 0†	6 0†	6 0†	5 9†
East Rand Coals	2 3	2 3	2 3*	2 2*	2 3*
East Rand Deeps	1 0*	1 0*	1 0*	1 0*	1 0*
E.R. Minings	—	—	—	19 0†	—
East Rand Props.	5 6*	5 6*	5 3*	5 3*	5 3*
East Rand Debentures	£68*	£68*	£68*	£68*	£68*
Eastern Golds	1 3*	1 3*	1 4*	1 4*	1 5*
Frank Smith Diamonds	3 6†	3 5*	3 3*	3 6†	3 3*
Glencoe Collieries	6 0*	6 0*	—	6 0*	6 0*
Glynn's Lydenburgs	24 6*	24 6*	24 6*	24 6*	—
Government Areas	91 9*	92 0	92 3	91 9	91 0

	Tues., 24th.	Fri., 27th.	Sat., 28th.	Mon., 30th.	Tues., 31st.
Jhb. Bd. of Executors	—	—	28 0*	28 0*	28 0*
Jupiters	4 9*	4 9*	5 0	5 0*	5 3†
Klerksdorp Props.	3 0*	—	—	3 0*	3 0*
Knight Centrals	5 9*	5 9*	5 9*	5 9	5 7*
Lace Props	10 6*	10 9	10 9†	10 9†	10 4*
Leeuwpoot Tins	24 0	25 0	25 3*	25 6*	26 3*
Lydenburg Farms	8 8*	8 9*	8 8*	8 6*	8 8*
Meyer & Charltons	—	93 9	—	—	—
Modder B's	153 0*	153 6*	154 0*	155 0*	157 6†
Modder Deep	152 0*	151 6*	151 0*	153 6	153 0*
Modder Easts	18 6	17 9	17 7*	18 1*	18 6
Do. Options (3 years)	—	4 3*	4 6	4 6*	4 6*
Do. Options (4 years)	—	—	5 6	5 6	5 7*
Hume Pipes	27 6*	27 6*	27 6*	27 6*	—
Natal Navig. Col.	21 0*	—	21 0*	21 0*	20 0*
National Banks	£14 ³ / ₈ *	—	—	£14 ³ / ₈ *	£14 ³ / ₈ *
New Boksburgs	1 0*	1 0*	1 1*	1 1*	1 1*
New Eland Diamonds	25 0†	23 0*	23 0*	23 0*	23 0*
New Era Cons.	10 6*	10 6*	10 6*	10 9	10 6*
New Geduld Deeps	5 9*	6 0†	6 0†	6 0†	6 0†
New Heriots	12 6*	12 6*	12 6*	12 6*	—
New Kleinfonteins	10 9*	10 9*	10 9*	10 9*	10 9*
New Modderfontein	£26 ⁵ / ₈ *	£26 ⁵ / ₈ *	—	£26 ⁵ / ₈ †	—
New Unifieds	—	—	6 0†	—	5 0*
Nigels	4 0*	4 0*	4 0*	4 0*	4 6*
Nourse Mines	—	—	—	—	15 0*
Pretoria Cements	61 0	61 0*	61 0	60 0	59 0*
Princess Estates	2 4*	2 6*	2 6*	2 7	2 7*
Rand Collieries	—	—	—	—	3 0*
Rand Nucleus	1 10	2 0*	2 0†	—	—
Rand Select. Corp.	87 6†	—	86 0†	—	—
Randfontein Deeps	5 0†	5 0	4 9*	4 9*	5 0*
Randfontein Est.	—	14 6†	14 3†	13 6*	13 6*
Rooibergs	7 9	7 6*	7 6	—	7 3†
Rondepoort Uniteds	—	—	2 9†	—	2 0*
Ryan Nigels	3 0*	3 3†	3 3†	—	3 3†
Shebas	—	1 6*	1 9†	1 3*	1 9†
Simmer and Jacks	—	6 0†	—	—	6 0†
Simmer Deeps	2 6†	2 0*	2 0*	2 0*	2 0*
S.A. Breweries	33 0†	—	33 0†	—	—
S.A. Lands	6 3	6 1*	6 1*	6 0*	6 0*
Springs Mines	66 6	66 6*	66 6*	66 6*	67 0*
Sub Nigels	27 3*	27 4*	27 3*	27 3*	27 3*
Swaziland Tins	—	—	28 6†	—	—
Trans. G.M. Est.	12 6*	13 0*	13 0*	13 0*	12 9*
Van Ryn Deeps	70 6*	70 6	70 3	70 3	70 9*
Village Deeps	—	—	15 0*	16 0*	—
Western Rand Estates	2 0*	2 0*	2 0*	2 3*	2 3*
Witbank Collieries	—	—	—	54 0*	—
Witwatersands	—	—	—	—	19 0*
Witwatersrand Deeps	13 9*	—	13 6*	13 3*	13 9*
Wit. Townships	—	24 0*	25 0*	—	—
Wolhuters	3 3*	3 6*	3 6†	3 3*	3 3*
Zaaiplaats Tins	15 0	14 10*	14 10*	15 3	15 4*
Union 5 per cent.	£102 ¹ / ₂ *	£102 ¹ / ₂ *	£102 ¹ / ₂ *	£102 ¹ / ₂ *	£102 ¹ / ₂ *
New States	20 0*	20 3	20 0*	20 0*	20 0*
S. Van Ryn	13 0*	13 0*	13 0	12 10†	13 0
S.A. Alkali	36 0*	36 6*	37 0*	37 6*	37 6*
West Springs	23 0*	23 3	23 0	23 0	22 10*
De Beers Pref.	—	—	£14 ¹ / ₂ *	—	—

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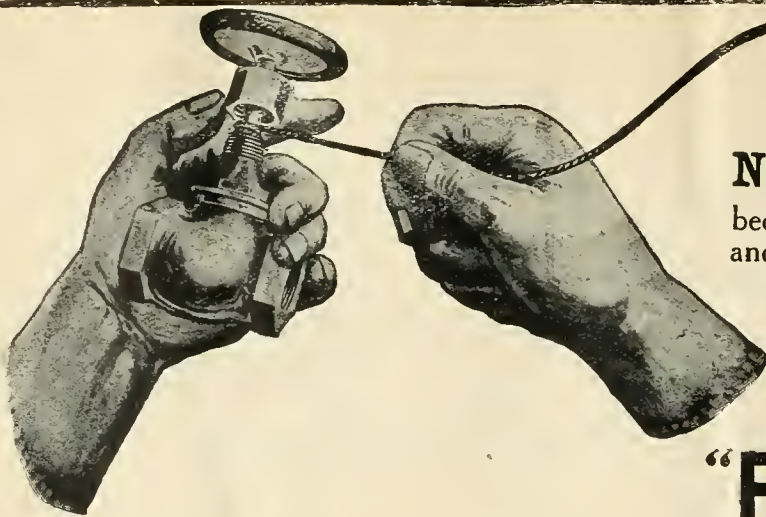
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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Outlook for 1919—Changes in Timber, Iron and Steel—The Trend of Business.

A FEELING of optimism usually accompanies the opening of a New Year—in a measure it is so for 1919. But South Africa is up against many big problems as regards the first portion of the year at all events, and no good purpose would be served in not tackling the various questions that are standing out so prominently. The truth is that the armistice came upon us too suddenly and so upset the best of calculations, as many merchants and importers have been caught with heavy stocks in their warehouses in Johannesburg as well as many orders being fulfilled and even yet to be fulfilled in Britain, America and Canada, and these orders of doubtful arrivals are the things that matter. It can be accepted as an axiomatic fact that the mines on the whole have six months' general supplies on hand, some more, some less, but in the aggregate the best informed people accept that statement. The mines would be ill-advised to go full speed ahead and use up all these reserves, as the peace is not absolutely here yet and unexpected happenings may occur. As regards the mines, suppose they use up half from reserves each month, and as to the other half, well, much of that half would come from the belated goods on the water, or to come anyway. Therefore this will give our market only very little business for the first three months of the year, and three months is a long while, seeing how fast the world, especially the British commercial world, is moving. Every cable appearing in the press about shipping becomes more encouraging. For example, the Shipping Controller says the situation was already much easier and ships were being placed on trade routes which had been neglected during the war. Again, a Melbourne message says that 29 steamers are expected very soon to load up wheat. The British Government has already lifted the embargos off manufactures, with few exceptions, and even the exceptions can be obtained by special permission. The most significant remark in one cable is: "The effect of adverse factors will diminish greatly in a few months, and every effort is being made by the Departments of State

to assist in the reconstruction of the British export trade, the importance of which is fully realised." A private cable has been received that the export of white and red lead is free from all restrictions from Britain; the same message also stated that dry white lead is £60 per ton in England (a long ton, and ours are short ones), which therefore represents about half our selling price. Hence in a month's time the problem of rearranging our prices must be considered, or may be that when holders here thoroughly grasp the position, the thing will be discounted either partly or fully very quickly. This is only given as a typical case; and yet another—the Olifantsfontein people say that the price of glazed pipes is unsettled on the easier side because several consignments have come into Durban from Staffordshire recently. The new price did not transpire, and under the circumstances the subject was not pressed. To-day, through the mine reserves being used, and so much material coming and under order, no one in Johannesburg seems in a buying humour excepting from day to day to fill up orders on hand to be completed. And obviously ours is not an unlimited market, which most speculators evidently overlooked when loading themselves up with big parcels. Against these adverse circumstances looming in the near future, we are a very live community with our energetic merchants and public, therefore if we fall off in trading with the mines we shall be forced to look for other pastures by our enterprising people. Naturally there are quite big fields in Eastern and Western Africa, as well as the Northern Transvaal, Belgian Congo and other places. It can well be

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recognised that Johannesburg will not be such a pond or *cul de sac* as in pre-war days, but can be likened to a river as the outlets for our own people, as well as the newcomers, will be much wider and greater with the immense possibilities throughout South Africa under the peace conditions.

Another all-important factor for law and order was the sweeping victory accomplished by the Coalition Government in the United Kingdom, which has been received by the commercial community in South Africa with feelings of satisfaction and pleasure, second only to those evoked by the announcement of the armistice on November 11th. The financial people and merchants not only feel that this will give stability but prove a wonderful incentive to enterprise in commercial affairs, besides being in itself an excellent answer to Bolshevism, and, indeed, to all other "isms," tending greatly to give that steadiness to affairs on the Continent so necessary and desirable if the Entente Powers are to deal successfully with the many important problems now facing them.

TIMBER ROOFING IRON AND BUILDERS' HARDWARE.

The manager of a builders' hardware house states that December was the worst month experienced for five years. The building trade had a nasty setback during the 'flu epidemic and has never really recovered. Then came the armistice, when trade in this particular department dropped as if it had been cut like a knife, as every contractor and builder with one accord stopped buying, excepting for urgent necessities, as the belief was abroad that things would become cheaper. Cooking stoves are about ten per cent. cheaper because of advices that consignments are on the water. This drop is not surprising, as the price for stoves had become rather inflated. Wire nails have also declined to: 1 in., 135s.; 2 in., 120s.; 3 in. and 4 in., 105s. per 100 lbs., also galvanised roofing iron has fallen about 1d. to 2d. per foot for the 24 standard gauge. Timber is about the same, but fears are entertained that when business in Sweden starts after the holidays values will be easier, as 1s. 8d. per foot is quoted for forward delivery and even less for March. However, to get the correct quotation we must wait until next week, when business will have commenced after the holidays. As regards South African timber, the Government is advertising two forests for sale, thus showing that the authorities are alive to the necessity of securing our present high market values for timber.

ELECTRICAL GOODS.

There is no alteration in prices and very little doing throughout the holidays. Household lamps, in consequence of the acute competition, are advertised all over Johannesburg at 3s. and 3s. 6d. each. General materials are coming in more plentifully than heretofore from Japan, England and America. Although jobbing and house wiring are very

quiet indeed, high hopes are entertained that by the end of January business in this respect will improve. It is difficult to obtain reliable quotations at the moment.

IRON AND STEEL.

There is no alteration in the standard quotations, but these will be thoroughly overhauled after the holidays. Business is very quiet and values have a lowering tendency, simply because consignments of bar iron and mild steel are expected from America and Canada. Enquiries have been made for barbed wire at 42s. 6d. to 44s. per roll.

THE TREND OF BUSINESS.

At the close of December there were not the usual enquiries from the mines for the following month's requirements, presumably because the chief buying office finishes at the end of January. The brokers say that it is very difficult to sell parcels in any lines, even at a reasonable discount. One party remarked that merchants are set against buying, which is not surprising when one of Reuter's latest messages states that France may be placed on the same footing with the Colonies as Britain, otherwise France will not be able to face the pitiless competition for a long while to come.

PERSONAL.

His many friends will be glad to know that Capt. Clem D. Webb, M.C., late of the 5th S.A. Infantry, has received notification that he had been gazetted Major as from June 20, 1918, in the British Labour Corps, B.E.F.

* * * *

We are glad to be able to announce that Lieut. Owen Letcher has returned from East Africa and will resume duty as Mining Editor of this paper as from February 1 next. Our readers may rest assured that now that disabilities due to an attenuated staff and the paper shortage are being gradually removed the journal will resume its former size and comprehensiveness.

* * * *

The many friends of Mr. Harry Howard Johnson, M.I.M. & M., M.I.Mech.E., who was formerly well known in South Africa as manager of the Village Deep mine, and latterly as consulting engineer to a number of Rhodesian companies, and who, at the outbreak of war, was consulting engineer to the Kirkland Lake group in Canada, will be pleased to note that he is home on leave and was the recipient at the hands of H.M. the King, at a recent investiture, of the D.S.O. for distinguished services in the field. Mr. Johnson, who is a Lieutenant-Colonel commanding a battalion of tanks in France, has also been made a Chevalier de la Legion d'Honneur by the French Government. It is interesting to note that Lieut.-Col. Johnson's elder brother, Lieut.-Col. Frank Johnson, C.M.G., D.S.O., who is well known as a director of Falcon Mines, Ltd., and other companies, has been in command of a battalion of the Royal Sussex Regiment in India for the past two years, and is at present serving on the staff in that country.

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AND ENGINEERING RECORD.

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Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

NOTICE.—The postage of this issue of the *S.A. Mining Journal and Engineering Record* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

In another part of this issue will be found the first instalment of an address delivered by Dr. P. A. Wagner on the future of the mining industry in South Africa. Dr. Wagner's paper is easily the most comprehensive review of the subject we have seen, and we welcome the opportunity of giving it the wider publicity which it merits.

* * * *

The shaft-sinking record put up by Mr. Ivor Rees in sinking the No. 15 Circular Shaft at the Crown Mines has attracted considerable attention; and Mr. Stuart Martin, the Consulting Engineer to that property, has consented to read a paper on the subject before the S.A. Institute of Engineers next Wednesday night. It is noteworthy that the cost in machine spares of sinking 780 feet with Holman drills was only £156 11s. The No. 15 shaft, it may be recollected, is 21ft. 6ins. in diameter, or 20 feet clear after bricking. At the end of December last the shaft had reached a depth of 934 feet.

* * * *

Since our last issue the daily papers have published a fuller precis of the report of the Treasury

The Gold Question. Committee on the gold question. This appears to have been countered very effectively by the Gold Producers' Committee in London, and on this side it has drawn forth a reply from the President of the Chamber of Mines. Our readers are now familiar with the case made out for the relief of the industry, and we can only hope that, before it is too late, the Imperial and Union Governments will awaken to their responsibility and duty in the matter.

* * * *

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

* * * *

The value of the war to this country has been the means of creating a new and practical interest in the cultivation of the soil. Men who hitherto devoted their whole lives to mining are turning their attention to farming, and there is a general cry of "Back to the Land!" We reproduce in another column a most interesting interview with Mr. J. B. Taylor, whose opinions are well worth studying, and we are sure that all of our readers will be glad to hear that this successful South African has decided to return for good to the land of his birth and settle down to farming.

* * * *

From a recent census return in the Cape Province it would seem that there is an alarming migration of white people from rural districts to the towns; there is an indication also of the gravitation of large numbers of people from various parts of the Cape Province to the Rand. Although South Africa, at present, runs little risk of becoming a country of crowded cities, yet it makes it a more difficult problem for future Governments to convert this colony into a food producing centre if steps are not taken to stem the tide of migration from the country to the towns. There is no gainsaying the fact that there is too much dependence on the mines of the country and South Africa has been spoon-fed from this source of revenue long enough. Now is the time for the Government to start land settlements and not wait for the return of the soldiers.

Mr. J. B. Taylor's Views.

The Migration to the Towns.

The annual report of the Van Ryn Gold Mines Estates, Ltd., will be found elsewhere in this issue.

Van Ryn Gold. Owing to war and other difficulties the company reports little more than half the profit for the year ended June 30 last than it earned for 1916-17, namely, £96,800, against £178,600. As a result of labour shortage, etc., considerably less ore was crushed, while the average gold production was also lower, and, on the other hand, as with other Rand companies, costs increased seriously. After allowing for the two dividends, totalling 3s. 6d. per share, against 7s. for 1916-17, there will be £34,710 to be carried forward, as compared with nearly £26,000 brought in. The directors regret to have to report a decrease in the ore reserves, both in tonnage and average value, the latest estimate being 1,347,900 tons, worth 5'6 dwts. per ton. Considerable quantities of ore which were payable on the previous level of working costs have had to be temporarily eliminated in making up the latest estimate, but a proportion will, of course, be taken into account again as and when the present level of working costs is reduced. While Sir George Albu, the managing director, in course of an interesting report—from which we quote extensively in this issue—expresses the fear that the mine has passed its zenith, he points out that "although we cannot expect a return to the previous high level of profits, the mine should be capable of earning profits on a scale which, after the termination of the war, and with a return to more normal conditions, should show an improvement on recent results."

* * * *

A joint visit of the three Technical Societies, the Chemical, Metallurgical and Mining Society of

**Visit to New
Modderfontein C.M.**

S.A., The S.A. Institution of Engineers, and The S.A. Institute of Electrical Engineers, will be made to the property of the New Modderfontein G.M. Co., Ltd. (at the cordial invitation of the directors and management), on Saturday, the 18th inst. Amongst the many items of interest to be inspected are the Circular Shaft, the new Reduction Works, and the Electric Winder, full details of which will be handed to each visitor in an illustrated booklet now in preparation. A special train has been arranged for. The return fare from any station will be 5s., and only those in possession of the special train tickets can be permitted to travel by this train. A dining car will be attached to the train, which will enable members to obtain dinner on the return journey, should they desire it. The Management has kindly invited visitors to luncheon on the mine, and it is earnestly hoped that those members who may visit the mine by other means of transport than the special train will courteously advise their respective secretaries, in order that the necessary provision may be made.

* * * *

From the circular letter addressed by the directors of Nobel's

**The Big Explosives
Combine.**

Explosives Company to the Ordinary Shareholders of that undertaking, it seems that the long-continued negotiations between various companies and firms engaged in the explosives and allied industries for a consolidation of their interests have at length reached a satisfactory conclusion. The combine is to be known as Explosives Trades, Ltd., and includes Kynochs and the B.S.A. Explosives Co., Ltd. The authorised capital of the new company will be £18,000,000 in £1 shares, of which £6,500,000 will be in Six per Cent. cumulative Preference shares, preferential both as to capital and dividend, £8,000,000 in Ordinary, £1,500,000 in Deferred, and £2,000,000 "to be issued hereafter (subject to the rights of the cumulative Preference shares) on such terms and conditions and with or without a right of preference either in respect of dividend or capital or both as the company in general meeting may direct." It is impossible to say what the eventual issued capital of the new company will be, but if, as is anticipated, the whole of the shareholders in the constituent companies decide to exchange, the issued capital would be £6,232,443 in Preference, £7,584,194 in Ordinary, and £1,430,821 in Deferred, an aggregate of £15,247,458. The circular gives full particulars of the first

directors of the new company, with the nominal value of the shares of the constituent company's undertakings and the merger exchange, and the directors add their conviction that the closer co-operation to result from the adoption of this scheme is necessary to enable the explosives and allied trades to effectively deal with post-war problems. "Such an amalgamation as is proposed will enable the various technical, commercial, and financial problems to be more satisfactorily handled, and essential improvements in working conditions and economies in manufacture and distribution to be introduced, so that the various products of the company may be obtained by the consumers on such conditions as enable the company, their employees, and their customers to benefit by this amalgamation of British interests. Foreign manufacturers of explosives and kindred commodities have already formed themselves into powerful combinations, and British interests must be similarly consolidated if they are to maintain their position in the future."

* * * *

The question of dealing fairly and squarely with the returning soldiers is exercising the minds of all thinking people in the British Empire and South Africa if she wants peace and prosperity cannot

**The Future of the
Returned Soldier.**

afford to ignore this most important problem. The mines cannot be expected to do everything. No doubt they will absorb a large percentage, but the Government and the people will have to get a move on and devise some scheme in order to employ the men who have done so much and made such sacrifices for this country. Arrangements have been concluded with the War Office whereby the soldiers will be returned to South Africa in batches of 2,000 per week. A certain time on full pay will be given to the men to seek employment and get fixed up. What is the Government going to do?

* * * *

We notice that De Beers Company, Ltd., have acquired a large tract of ground on the Sundays

De Beers' Example.

River for the purpose of settling the soldiers, former employees of that corporation, on the land. It naturally occurs to the man in the street, that if De Beers and others, such as Sir Percy Fitzpatrick, are moving in the matter that it is about time the Government formulated and published what they are going to do. Some farmer has suggested that there are immense possibilities of an irrigation scheme on the Crocodile River in the Vliegpoort area, Rustenburg District, where rich plots of ground could be allotted to soldiers at a very low cost. By damming up the point where the river cuts through the range of mountains it is said that an immense reservoir would result; below the reservoir there extends for hundreds of miles rich soil capable of growing anything. This is a scheme which has been commended to the Government. We suggest that the Government take steps to inspect the site and obtain an engineer's report on the cost, and if the ground is reasonable in price and suitable for a settlement put the matter in hand at the next sitting of Parliament. The Kalahari scheme, written on by Professor Schwarz, of the University College, Grahamstown, is attracting more than the ordinary amount of interest and we hope in the near future to publish a series of articles from the Professor who is the originator of the scheme.

* * * *

There should be no clashing between the various returned soldier organisations. Some friction, unfortunately, exists in offices of the

Returned Soldiers' Employment.

"Comrades" and Natal League of Sailors and Soldiers." This should be nipped in the bud at once, and those responsible should remember the old Dutch proverb, "Eendracht maak macht" (Unity makes strength). At a meeting of returned soldiers in front of the Town Hall on the 8th inst., allegations and accusations were made against certain employers for breach of faith. This sort of thing is bound to crop up in increasing instances as the men return, and for that reason there should be unanimity amongst all the soldiers. Employers who refuse to give work to their returned employees on the grounds that the men may be

subject to recurrences of malaria fever are as unworthy of support as the people who have exploited the soldiers during their absence (and there are many cases) and should be boycotted. Such employers like all profiteers are merely the British types of the Hun. The soldiers should stick together and publish to the world the names of such contemptible and unworthy citizens. As far as we know the mines and big financial institutions are "playing the game" by their men. It is again alleged that certain returned soldiers have been told by their previous employers that they were fools to go and fight. Could there be anything more brutal and Hunnish? The only way to combat these unpatriotic persons is for the citizen sailors and soldiers to combine all their organisations and form one strong society, call it what name you like, and get together sufficient funds to assist one another to expose and fight any flagrant cases of injustice.

* * * *

In the course of his annual report, Mr. C. D. Leslie, the Consulting Engineer to the Consolidated Goldfields, pays the following notable tribute to the Jackhammer.

A Consulting Engineer on the "Jackhammer."

He says: "As agriculture and industries advance it is to be expected that the supply of native labour for mining will be even less plentiful than it is at present. Approximately 41,000 natives, or double the number of natives employed on the mines of this group, are engaged in hand-drilling on the mines on the Rand, and as a means towards maintaining the rate of output on our gold mines it appears highly desirable to eliminate hand-drilling as far as practicable in favour of machines of the Jackhammer type. Extended trials with these machines at the Robinson Deep mine, as referred to in last year's report, gave very satisfactory results. It was found that each Jackhammer, employing an average of 1.25 natives, did the equivalent fathomage of seven hammer boys and used only 9 per cent. more explosives per fathom than was used in breaking rock by hand. In fathomage broken their duty showed an improvement of 12.4 per cent., as compared with that of reciprocating machines, which used approximately 86 per cent. more explosives per fathom broken. Considerable progress in the use of Jackhammers has been made at the Simmer and Jack mine, the result there corroborating those obtained at the Robinson Deep and justifying extending the use of the Jackhammer on each of our mines."

* * * *

Mr. Wickham, H.M. Trade Commissioner for South Africa, has completed his tour in Great Britain. The first part of his visit to England was spent in London, where he met a great many business men by appointment, and also devoted two days to the London Chamber of Commerce. The second part was spent in visiting works in and within a short distance of London. During the last part Mr. Wickham travelled to the chief industrial centres of the United Kingdom, seeing works and giving interviews to members of firms. In all, Mr. Wickham visited 81 works, a large increase over the number during his previous tour, saw 552 firms, and addressed nine Chambers of Commerce. Except in Lancashire, where the interest shown by the cotton trade was disappointing, Mr. Wickham was very well received. The woollen and worsted trades in all branches showed great keenness in meeting him, and so did many other important manufacturing trades. He visited 27 machine works, 12 iron and steel foundries, 10 hardware workshops, 11 motor and cycle works, six chemical factories, and six china and glass works. The tour not only revealed the general alertness of British manufacturers and merchants to understand and avail themselves of the new conditions in the Dominions, but also proved the value of the system by which Trade Commissioners abroad are periodically brought into personal contact with industry at home.

TOPICS OF THE WEEK.

THE FIGHT AGAINST WASTE AND INEFFICIENCY.

THE annual report of the Consolidated Goldfields throws many sidelights on the struggle against waste and inefficiency that has marked the past year on the Rand. The speech made from the Chair by Lord Harris at the annual meeting is reprinted in full in another part of this issue, and may be left to speak for itself as a comprehensive summary and review of the Rand mining position by one peculiarly well fitted to judge. In the annual reports of Mr. D. Christopherson, the Manager, and Mr. C. D. Leslie, the Consulting Engineer, we find more detailed reference to the efforts made to cope with the difficulties created by the continuance of the war, and the newer problems of the industry. For instance, Mr. Christopherson pays a notable tribute to the work of the Central Buying Committee and brings out very clearly the value of the standardisation of supplies with a view to reducing importations. He shows that "it was found that many varieties of the same line were in use on the mines, differing only to a slight extent, but each reputed to have some special advantage over the other. The Technical Advisory Committee appointed a sub-committee to investigate this matter with a view to standardising supplies generally, and as a result standards have been laid down for screening, mill spares, grizzly bars, skip wheels and axles, piping, belting, etc. Standardisation will be continued until all supplies have been considered. As instances of what has been achieved in this direction, of 98 different kinds of mill screening that were in use on these fields, 77 have been eliminated. Battery cam shafts have been reduced from 36 to 13, and grizzly bars from 16 to 3. Economies have been effected in the use of wire ropes by withholding renewals until the Department was assured they were absolutely needed, and by urging the more extensive use of discarded hoisting ropes for mechanical haulage, for which purpose they are generally suitable. Not only is the work of this Committee extremely valuable under existing conditions, but the results of its investigations will be of great benefit hereafter, enabling considerable savings to be made in various directions." Again, in view of the statement made by Sir Willem van Hulsteyn during the week that phthisis sufferers were to have their compensation increased, it is noteworthy that Mr. Christopherson says: "While the mines do not seek to shirk responsibility in this matter, they nevertheless claim that compensation should not be unduly increased, and that finality should now be arrived at. . . . Large amounts have been spent by the mines in endeavouring to improve underground conditions, and this is a matter which has the constant attention of all concerned. To date, the mining industry has paid £2,709,309 to the funds of the Miners' Phthisis Board." In Mr. C. D. Leslie's report there are also several important points not covered by our extracts of last week. His striking tribute to the efficacy of the "Jackhammer" we reprint separately; and his conclusions in regard to the effect of reduced hours are also noteworthy. Mr. Leslie declares:

The lower tonnage for the year is a direct result of reduced hours of labour as from 1st January, 1918, since which time there has been a decline in the output per underground native affected by the shorter working hours of 12.52 per cent., equivalent to a loss of one and a half months' tonnage per annum with the same underground native strength. By this falling off the prevailing shortage of native labour is rendered much more acute and working costs are increased in every direction, resulting in a greatly reduced tonnage per annum multiplied by a smaller profit per ton. The reduced hours of labour, including the short Sunday shift, which is worked at a loss on mines with a small margin of profit, have seriously jeopardised the position of the low-grade mines. The proportion of each shift actually absorbed in the main operation of drilling with machines or hammer boys is seriously curtailed through loss of time in getting to and from working places and in preparation for drilling and blasting.

It would be interesting to know whether the experience of the other groups has been the same as that of the Goldfields in this regard. The matter is of sufficient importance, it seems to us, to warrant further investigation.

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THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*-I.

[By P. A. WAGNER, B.Sc., Ing.D.]

NOTWITHSTANDING the many adverse circumstances affecting the mining industry, the value of the mineral production of the Union during 1917 amounted to £52,288,766, only £636,224 short of that of the record year 1913, when diamonds to the value of £11,387,807 were produced. The diamond output for 1917 was worth £7,713,810—£3,675,997 less than that during 1913. Had it been anything like normal, the 1913 total would have been very considerably exceeded: a truly remarkable achievement after nearly four years of war, and one that, in view of the fact that over 92 per cent. by value of the total output is exported overseas, serves to emphasise our absolute dependence on the British Navy. Tables show that in comparison with 1913 the most important increases were under the headings gold, silver, coal, copper, salt, asbestos, soda and corundum; also that certain products such as rock phosphate, tungsten, talc, iron pyrite, mica and ammonium sulphate, that do not figure in the 1913 tables, appear in those for 1917. On the other hand, diamonds, lead and chert show notable decreases, and tar and kieselguhr, of which there was a small production in 1913, are not included in the 1917 tables. I propose, in the first place, to treat seriatim of the various minerals and mineral products enumerated in the tables so as to present to you a general picture of the mineral industry of the Union, while the second part of my address will be devoted to a discussion of the potentialities of the country in regard to future discoveries. Before proceeding, it may be of interest to record that the Union is not only the world's leader in the production of gold, diamonds, and corundum, but is happy in the possession of the largest known reserves of these minerals. In the matter of asbestos production we stand fourth, and in coal production eleventh.

GOLD.†

Gold has long been, and will without doubt continue for many a year to be the principal mineral product of the Union. The total recorded output to date is approximately 134,435,000 ounces—4,609·75 short tons—valued at £571,350,200. Much the greater part of this has been contributed by the Witwatersrand goldfield, the output of which during the past five years has averaged over £37,500,000 per annum. The output for 1917, namely 8,822,431 ounces, worth £37,475,303,‡ represented 42·34 per cent. of the gold output of the world. The high-water mark of production on the Witwatersrand was reached in 1916, when gold to the value of £38,492,070 was produced. It is not likely, for various reasons, that this figure will ever be reached again. Had it not been for the war, and for the serious shortage of native labour in recent years, it is not improbable, however, that the 40-million level would have been exceeded. At the present time the industry is faced with one of the gravest crises in its history. As a result of ever-increasing costs, no fewer than 14 low-grade mines, responsible in 1917 for almost 19 per cent. of the total output of the Witwatersrand, are either actually being worked at a loss or barely repaying exploitation, and it is quite evident that, unless relief in some form be forthcoming, most of these mines will sooner or later have to suspend operations. This, in addition to being fraught with the most serious consequences to a large section of the community, would result not only in a very considerable decrease in the current output, when, according to the

highest authorities, it is absolutely essential to the successful prosecution of the financial side of the war that gold production should be maintained at its highest possible level, but in the ultimate output of the Witwatersrand as it is certain that a number of the properties referred to, if now closed down, would never be re-opened. The inadequacy of the supply of native labour and the shortage of glycerine have undoubtedly contributed towards bringing about this very serious state of affairs, but at the root of the trouble lies the fact that whereas the price of almost every commodity incidental to its production has risen enormously as a result of the war, that of gold itself is arbitrarily fixed. As a matter of fact, the mines, in consequence of the increase in freight, insurance and refining charges, only receive £4 3s. 6·84d. per ounce compared with the standard value of £4 4s. 11·45d., and owing to the depreciation of the British currency given in payment the actual value received is much less. As the producers, if they were allowed to dispose of their gold in the best Allied markets, would obtain much better terms than they now do, a case for equitable adjustment undoubtedly exists. Various remedial measures have been suggested to effect this, among the most recent of which are: (a) That the price of gold be increased by 5 or even 10 per cent. (b) That the Imperial Government—it is now generally realised that this is essentially an Imperial question—should grant a subsidy of so much per ounce or per ton milled to all low-grade gold mines within the British Empire. (c) That part of the increased cost of production, due to the rise in the price of commodities and wages, should be borne by the Imperial Government. The first of these proposals is obviously impracticable, having regard to the enormous stock of gold actually in existence—it is estimated at over £2,000,000,000—compared with which the total annual production is very small. The second and third, while perhaps indefensible on sentimental grounds, have both much to recommend them. A Committee, elected by the gold producers of the Empire, are at present preparing a case for presentation to the Imperial Government, and it is to be hoped this will result in a satisfactory solution of the problem being arrived at. In regard to the question of freight and insurance charges, which even in normal times constitute quite a heavy item, it appears to me that these could to a great extent be done away with, in so far, at any rate, as the mines are concerned, by minting as large a proportion as possible of our gold locally; and I am strongly of opinion that a great mint for gold as well as silver coinage should be erected at Johannesburg. The silver for the purpose would have to be imported, but this, after all, is also done in England and other countries. Assuming that means are found to enable the majority of the low-grade mines threatened with being closed down to continue operations, it should be possible for some years to maintain the output of the Rand at nearly its present level,§ as developments at some of the mines on the Far East Rand have exceeded expectations, and it is anticipated that the opening up of new mines in that area, which is proceeding apace, will make up for the decline in production on the Central Witwatersrand and in the Boksburg area. It is none the less certain that there will henceforward be a steady diminution in the production of the Witwatersrand goldfield.

(To be continued.)

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

* Being Presidential Address read before the S.A. Association for the Advancement of Science.

† I am indebted for assistance in the preparation of this section of the address to Sir Robert Kotzé and Mr. Samuel Evans.

‡ The output of the Heidelberg district is included in this total.

§ The value of the output of the Witwatersrand mines for the first six months of 1918 was £687,970 below that of the corresponding period of last year. This, however, is partly attributable to the floods during the earlier part of the year.

RAND MINES AND PEACE PROBLEMS.

The Price of Gold—An Important Decision—Utopian Distresses—The Battle of the Metals—President Wilson's Rival—The Cross of Gold.

[The Editor of the *S.A. Mining Journal* is not responsible for the views expressed in the following articles. They are sent in by a correspondent who is not interested in mining, except as a member of the public, and his comments are those of an outside observer who deals with his subject from the standpoint of a layman, ignorant of the latest mining developments and facts. His object is to call attention to some consequences arising from (1) The Price of Gold; (2) The Cost of White Labour.]

He writes: It seems, sir, that Rand gold mines have not come out of the war unhurt. I gather from the statements made by Sir Evelyn Wallers and other mining leaders that the end of the war finds all the companies making smaller profits and some of them making losses. The list of these losers is neither short nor confined to the smaller mines. We may take it that mines producing about one-third of our total gold output of, say, 38 millions annually are below or on the line of payability, and that a continuance of the adverse conditions of to-day must produce a similar reduction in the prosperity of the Rand and of the Union. But we have so often heard the cry of "wolf" about the mines that the public does not take this newest news about the failure to make profits seriously: it is taken for granted that some relief will be got somehow or somewhere. I want to suggest that to-day there are factors in the case that must raise the misgiving that it may not be possible to restore the position to what it was before the war. And if we cannot, what will follow?

CAN WE GET A HIGHER PRICE FOR GOLD?

A business man whose profits have gone has two courses, or rather three, open to him. He may (1) increase the charge made for the article he produces; (2) cut down the cost of his production; or (3) close down his business. The mines on the unprofitable list published are therefore compelled to adopt one or both of remedies (1) and (2); if they do not, then remedy (3) comes certainly into action—as it did the other day in the Bantjes Consolidated. In saying this I am not unmindful of those confirmed optimists who think that better ore will be struck when the mines really need it; but the Bantjes did not strike better ore, and we may in actual practice leave these lucky chances out of the reckoning.

Now the hard facts of war have battered many theories to death, and among them are those speculations and theories that obscured the effects of gold production on the prices of goods exchanged for gold. It was taught by such economists as Giffen that the amount of gold in circulation did not affect prices. But suppose it does: suppose that when gold is produced and circulates in greater quantity than before, the effect is to cause a higher range of prices for everything that is exchanged for gold; obviously the conclusion follows that if the Rand gold mines increase the

quantity of the metal they produce they thereby increase the prices of the goods the world buys. That is to say, labour and other costs go up. The answer then to the inquiry whether the price of gold can be increased is that which has just been given by the British Treasury Committee which was appointed to consider the agitation of the London gold companies for a better price for gold. According to the cable published on Monday, "the Committee is not prepared to recommend any bounty or subsidy for the purpose of stimulating the output, as such a measure would be financially unsound. The result of a subsidy would be that the purchasing power of the whole world's gold would be diminished, while the value of commodities for which it was exchanged would rise."

AN OFFICIAL ANSWER.

The importance of this report is likely to be overlooked, not only by the public generally but also by many of those who are concerned in the production of gold. So far as I know this is the first time in the history of England that an official commission has endorsed the theory that prices of goods are affected by the quantity of gold in circulation. Such a finding will make some of the older economists turn in their shallow graves, and it will, too, excite quite a number of present-day experts to protest. Personally, I never could see that any other conclusion is possible. Increase the world's gold output and you increase the price of the articles that gold buys; decrease the world's gold output and prices fall: everything becomes cheaper. If this is true, as the Committee implies, then future historians of this era, who know their business, will say that the most important result of the Great War was the discovery by politicians and the public generally that the economic position of the nations, their prosperity and their pain, depended directly upon their currency—that is, their money conventions.

A UTOPIAN MINE.

Perhaps it is worth while indicating the kind of argument that long ago convinced me and may help to convince my readers that money and prices are linked together like the tug and the steamer: that the one follows the other. When such an idea or guess is started the historical evidence can be examined for support or contradiction—a subject I do not propose to enter on except to say that the evidence supplied by the war has no doubt been the main factor in causing the Committee to give the verdict just reported.

There is an island, let us say, called Utopia that possessed a mad banker who succeeded in collecting nearly all the gold on the island, and then sailed over the sea and used his gold as a sinker to carry him to the depths. Only a few hundred sovereigns escaped him, and the island discovered suddenly that the madman had deprived it of its money. The first effect of the shortage was to send prices down; goods became cheaper. The island had a law that debts can be paid only in gold, and though the authorities called in the sovereigns and minted them into smaller coins it was impossible to supply the needs of trade. The banks refused to lend any money because the law required them to hold a certain proportion of gold against their loans, and all enterprise stopped. Raw materials used in manufacture became largely unsaleable, and the stoppage of industries caused great distress among the people, who were compelled to offer their labour for food only. Most of the country districts were reduced to barter, and could get few of the luxuries which they were accustomed to obtain in the town. The island, in fact, was reduced to the condition of England in the days of the Saxon and Norman Kings. Then a silver mine is discovered, and after carefully considering the relative value of the gold and the cost of mining the

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THREE SEAS BRAND.

silver, the price of silver is fixed, let us say, at 10s. an ounce. The gold in this case was withdrawn from circulation and became the standard of value, and determined the price of the silver produced from the silver mine. It produced all the silver the business of the island called for, and presently banking operations and the use of cheques further relieved the position. The aid from this latter development was, however, limited, as many of the islanders were uneducated and could not write their names to cheques or any other paper.

Then a prospector found another silver mine—a richer one. The owners produced the silver at 2s. 6d. an ounce. The mint or bank of Utopia was compelled by law to purchase all silver at a fixed price of 10s. an ounce, and in addition the owner of any silver in bars could have it minted at the public mint into coin.

The practical effect of such conditions was that presently the owners began to try and force silver into circulation. They paid their miners more in order to make them accept new coins, and these men passed the silver to the butchers, bakers and bar-keepers. Sellers of produce were paid more silver to accept the new coins, and the price of goods throughout the island began to rise. . . More silver was demanded by the owners of goods, and the process once started, the rise in prices continued until the first mine closed down. Eventually the second and richer mine found prices so high that its former profits almost disappeared.

A COMPLEX PROBLEM.

Now this example will not be accepted by experts as a complete explanation of what happens when prices rise owing to an increase in the quantity of money. The existence of many gold-using countries and many silver-using countries, and the very complex relations so created between the metals and prices, create almost an insoluble problem, though Professor Lehfelddt, of the local University College, has tried to state these relations as an equation to be solved by mathematics. Again, at no time in the history of the world has gold been so plentiful as to compel English banks to take action to escape their obligation to take gold at a fixed price. I have used the illustration only to show that a disturbance of prices at one point very soon affects a whole country, and will extend to others. Alluvial gold miners, for example, who buy their food and drink at exorbitant prices with "gold dust," cause a break in prices that may spread far. Money is like water in this respect: it tends to reach a definite price level over the whole world, and a break at one point eventually affects the whole gold area.

The most common way in which prices are driven up is by the special rules of the Bank of England, by which gold is made, by law, the basis of our credit system. When gold is plentiful in the banks, the bankers advance money more freely and enterprise is stimulated. Competition for raw materials comes in and up go prices. This is what has happened during the last twenty years, owing to the gold production of the Rand—at least it was one of the chief causes of the rise in prices before the war. The demand during the war for goods and materials has been so active that naturally every class of commodity is now high in price. But it must be understood clearly that the war has only aggravated a condition of things that existed before the war. The state of trade and business in Germany owing to the expansion of credit, made possible by Rand gold, was indeed no inconsiderable factor in bringing on the war. The desire to collar the East and as much of the world as possible became an irresistible passion with the prosperous German bankers and merchants who had made money by their enterprises in Turkish railways and in every other country about the Mediterranean.

THE GOLD AND SILVER CONTEST.

But it is as well to bear in mind also that the over-production of a metal used as money has been, at times, a factor in these big questions of price. It was the big silver mines of South America that set the English pirates, Drake and Raleigh and others, moving on the waters and capturing Spanish galleons. We find that gold and silver questions

began to crop up soon after Queen Elizabeth's time. Gold was given second place in the reign of Charles II., and silver became the only legal tender. Later on gold went to the top again after the wars with Napoleon, but gold and silver were each legal tender for all debts. Then came the big silver discoveries in the Western States of North America in the sixties. The United States and Europe found their currency systems greatly upset; and England, which had been a bi-metallic country (that is, a country in which two metals are legal tender), became a mono-metallic country.

BRYAN AND SILVER.

Naturally this step caused a tremendous disturbance in the silver markets, because other countries also "demonetised" silver. It caused almost a revolution in Western America. Those South African gentlemen who imagine, to judge from their letters, that South Africa is a law to itself in these matters had better look up the biography of Mr. W. J. Bryan, who was President Wilson's right-hand man when the present war began. Bryan came to the front as a public man at the Convention held in Chicago in 1896 to elect a President for the United States. He was not a candidate when the Convention began. But a single speech on the silver problem sent him with a jump nearly to the top. He has been a candidate for the Presidency at every election since. And it may be said that if the currency problems of the world—including the States—had not been relieved by the discovery of great stores of gold on the Rand he would have been President of the United States. He might have been President now during the war! Then America would never have joined the Allies—because Bryan is a pacifist—and so, according to some persons, England would have been beaten.

Bryan is a pacifist because he was a silver man first. He has studied social questions as a currency expert, and thinks he can bring in the millenium by making silver legal tender. We get the note of his mind in the famous final sentences of his great speech which I have referred to. I quote it to suggest that "hard" money like silver and gold carry human fortunes and human destinies with them.

A CROSS OF GOLD.

Bryan declared, like some South Africans, that the United States could make their own currency laws. "It is the issue," he said, "of 1776 over again. Our ancestors, when but three millions, had the courage to declare their political independence of every nation upon earth. Shall we, their descendants, when we have grown to seventy millions, declare we are less independent than our forefathers? . . . If they (our opponents) say bimetallism is good but we cannot have it till some nation helps us, we reply that instead of having a gold standard as England has, we shall restore bimetallism, and then let England have bimetallism because the United States has. If they dare to come out in the open and defend the gold standard as a good thing, we shall fight them to the uttermost, having behind us the producing masses of this nation and the world. Having behind us the commercial interests and the labouring interests, and all the toiling masses, we shall answer their demands for a gold standard by saying to them 'You shall not press down upon the brow of labour this crown of thorns. You shall not crucify mankind upon a cross of gold.'"

A speech on bimetallism would hardly be understood in England. But in the States so acute was the situation created by the scarcity of gold that the public knew what Bryan was talking about—and his speech was followed by the support of the delegates of 31 States. He was then nominated as Democratic candidate for the Presidency, though at the time he was not generally known.

I suggest that these references to forgotten matters remind us that the currency position was an acute public question twenty years ago when gold was scarce. It is becoming acute again.

(To be continued.)

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THE YEAR WITH THE VAN RYN GOLD MINES.

Points from the Managing Director's Report—A Period of Abnormal Difficulties.

In the course of his report on the operations of the Van Ryn Company for the financial year ended 30th June, 1918, Sir George Albu, the Managing Director, writes:—During the year an average of 140 stamps ran for 318·46 days, and with tube mills crushed 410,300 tons of ore, yielding 110,359·52 ozs. of gold, etc., of the total value of £460,749 1s. 10d., equal to £1 2s. 5·5d. per ton treated. The working expenditure for the same period amounted to £344,648 5s. 10d., or 16s. 9·6d. per ton, thus leaving a working profit of £116,100 16s., or 5s. 7·9d. per ton. A comparison with the figures for the preceding financial year reflects a decrease of 46,150 tons in the quantity of ore crushed, with a reduction of £91,564 10s. 9d. in the value of gold won, and of 1s. 8·9d. per ton in the average recovery. As pointed out in the accompanying report of the manager (and as foreshadowed in my report for the previous financial year), working costs have still further increased during the year under review, the additional expenditure in this respect being equivalent to 1s. 6·5d. per ton crushed. This increase is due partly to the decreased quantity of ore milled, consequent upon shortage of native labour, which necessitates the standing charges having to be distributed over a smaller tonnage; partly also to the considerably enhanced prices for mining supplies, and the temporary additions to the wages of our white employees which we have had to make in order to counteract to some extent their increased cost of living, and in a large measure to the more expensive mining in the narrow stopes now being opened up.

Ore Reserves.—The payable ore reserves were recalculated at the end of the financial year, and, as shown in the manager's report, consist of 1,347,916 tons, of an estimated value of 5·6 dwts. over 52 ins. In comparison with the previous year's return, it will be seen that there is a reduction in quantity of 382,856 tons, and in value of 0·97 dwt. The reduction in quantity is due partly to the higher scale of working costs prevailing under present conditions, and the necessity for increasing the pay limit to a corresponding extent; partly to the low values met with in the No. 3 mine, and partly to the limited number of developing faces at present available. The latter point is instanced on reference to the footage driven, risen and sunk during the year, which amounted to 2,786 ft., as compared with 7,689 ft. during the previous twelve months. The reduction in value is due to two causes. Firstly, to the necessity for increasing the average stoping width from 50 ins. to 52 ins., and, secondly, to the application of a corrective factor to the mine valuation, in order to arrive at a more accurate figure for the actual recovery to be expected. The increase in stoping width was found to be desirable as the result of our experience in working the steep stopes of the No. 3 mine, where, on account of the friable nature of the footwall, it

was found impossible to keep the stoping width down to the former estimate. The application of a corrective factor to the mine valuation, although it may appear somewhat arbitrary, is no new thing. In a mine where the reefs are wide and the gold is distributed evenly throughout their width, the liability for error in sampling is but small, and when the Van Ryn was in the happy position of working stopes of this nature, the necessity for such adjustments was not apparent. Now, however, that such a high proportion of the ore reserve consists of hanging-wall reefs in which the gold is concentrated in narrow bands, and which, owing to development being carried out on the footwall portion of the series, are only partially exposed, the unavoidable variation between underground sampling and actual recovery becomes more marked, and it is therefore necessary to apply a factor to compensate for this. This difficulty of valuation is likely to be even more marked as the tonnage drawn from the hanging-wall reefs increases.

Water.—Reference was made by me last year to certain arrangements, which had been carried out on the mine to ensure the future water supply, the effect of which, it was anticipated, would be to make the company independent of outside sources. This prediction has been fulfilled, and it was found unnecessary to purchase water from any source during the year. At the present time both dams are overflowing, and a plentiful supply of water is obtainable from the boreholes.

Native Labour.—I referred in my previous annual report to the shortage of native labour, which, although fairly acute for the period then under review, threatened to be even more so in the future. Unfortunately, this actually happened—the average number of natives employed during the year

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being only 2,310, which represents a further decrease of 320, as compared with the previous year. On most mines this shortage of labour would be counteracted by the employment of additional machines in the stopes, but on the Van Ryn, owing to the peculiar nature of the ground to be stoped, this cannot be done to any extent, and, in consequence, shortage of native labour is at once reflected in reduced tonnage and revenue and higher costs—as instanced in the results from the mine for the past financial year.

Sand Filling.—Sand filling in the Nos. 4 and 5 sections of the mine is proceeding steadily, and at the present time a new borehole is being sunk in the No. 2 section for the same purpose. The value of sand filling to the Van Ryn is almost inestimable. In certain areas of the mine no less than four reefs exist, separated from one another by narrow partings of quartzite, which vary in width from three to about eight feet. If all four reefs were worked together, the full width would be unpayable on account of the barren nature of the partings. The scheme of attack, therefore, is to work the footwall reef first, and after this has been exhausted, to fill the excavation with sand, then work the next reef of the series, and so on. In addition to this, by adopting sand filling we shall be able to reclaim large numbers of pillars from the old stopes, which otherwise would be lost to the company, since their removal before the stopes in the vicinity were filled would start extensive caving, which might result in losing whole areas of the mine.

South Reef.—It will be remembered that in the past a considerable tonnage has been drawn from the South Reef, which is an ore body lying some 500 ft. above the Main Reef series. This reef has been opened up in the Nos. 1, 2, 3 and 4 mines, but until lately it had not been located in the No. 5 section. Recent prospecting work shows that the reef exists in this area, and that payable values are met with. Further prospecting work, with the object of proving the extent of the reef, is being carried out at the present time.

General.—In my report of a year ago I intimated that, in view of the more recent development then being carried out, we could not in future look for a higher average recovery than 24s. per ton, but mining operations for the past financial year have shown that it has not been practicable to maintain this figure. On account of the falling profits, and especially the decreasing yield per ton from the ore milled, I deemed it necessary to have a thorough investigation of the mine made by our technical adviser, with special reference to the question of the value of the ore reserves. As a consequence of this examination, and in view of the actual results being obtained from milling operations, it was apparent that the ore reserves were not giving the full value indicated—and in the past obtained—from the sampling and assaying of the blocks. As pointed out in the earlier paragraphs of this report, the explanation appears to lie in the change from the wide reefs which, particularly in Nos. 4 and 5 mines, have hitherto characterised the property, to the narrower reefs now representing for the most part the remaining ore contents of the mine. The difficulty of correctly assessing the probable recovery value of narrow reefs is now recognised, and, in the light of experience gained, allowance is generally made, in calculating ore reserves, for a considerable margin of error, by adjusting values to a conservative basis. Our experience on the Van Ryn Estate, however, had for such a long period of years shown that the values exposed by development were fully

borne out in stoping, that the necessity for drastic adjustments did not seem to arise in our case. It is probable that the change of mining conditions from wide to narrow stopes, being of a very gradual nature, was not fully recognised, more especially as its influence only began really to be felt towards the end of last year. Now, however, that this influence has become so marked, it has been necessary to apply a reducing factor in valuing the ore reserves, and the effect of this is shown in their lower average value. The recovery value to be expected from the ore reserves as now revised is round about 21s. per ton, which more nearly approximates the yield actually obtained during the past nine months. It is inevitable, in the case of a mine with a very long history of successful operations, that the time must come when the grade and profits begin to show a decline, and we must regretfully realise that this position has arrived in the instance of this company. At the same time, I desire to point out that although we cannot expect a return to the previous high level of profits, the mine should be capable of earning profits on a scale which, after the termination of the war, and with a return to more normal conditions, should show an improvement on recent results.

It is notified that the S.A.R. Administration is calling for tenders for the supply of 250 4-wheeled drop-sided sheep trucks. Tender forms and further particulars may be obtained only from the High Commissioner for the Union of South Africa, 32 Victoria Street, London, S.W.

Salphos, Ltd.

Presiding at the first annual meeting of shareholders of Salphos, Ltd., held in the Board Room, Corner House, this week, Mr. E. G. Izod said there were now indications that the labour position was becoming more favourable. Their representative at Saldanha Bay reported that he hoped that within the next few weeks he would be able very materially to strengthen the labour force at work on the quarry. The most important point before the company was the grade of the phosphatic rock which they were able to mine from the Houtjes Bay deposits. The result did not show such a high grade of rock as they had hoped for, but when the shortage of labour was taken into account and it was further realised that a very large area of ground at Houtjes Bay was entirely unexplored, it would be seen that it was yet really too early to make any accurate forecast of the value of the deposit. The motion for the adoption of the report and accounts was seconded by Mr. Robert Niven and agreed to. Messrs. Alex. Aiken & Carter were re-appointed auditors. At the meeting 146,896 shares were represented out of a total issued capital of £150,000.

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COMPANY.	Date.	No. of Div.	Rate per cent.	Capital. £	Amount. £	Total for Year.		Total last Year.	
						Rate. p.c.	Amount. £	Rate. p.c.	Amount. £
Apex	June	24	5	150,000	7,500				
	December	25	5		7,500	10	15,000	12½	18,750
Anglo-French Navigation	Dec.	1	7	110,000	7,700	7	7,700	—	—
Anglo-French Nav. (Pref.)	Dec.	15	7	120,000	8,400	7	8,400	9·6	11,530
Cassel	June	15	5	200,000	10,000				
	Dec.	16	5		10,000	10	20,000	7½	15,000
Clydesdale Coll.	June		7½	185,000	13,875	7½	13,875	5	9,250
Coronation Coll.	June	14	15	83,000	12,450				
	Dec.	15	12½		10,375	27½	22,825	25	20,750
Middelburg Steam (Pref.)			5	65,000	3,245	5	3,245	5	3,245
Middelburg (Ord.)	March		+3¾	99,888	3,746	3¾	3,746	10	9,989
Transvaal & D.B. Inv.	Nov.	16	25	185,000	46,250	25	46,250	22½	41,625
Twefontein Coll. (Pref.)	+June		6		4,500				
	*March		4	75,000	3,000	10	7,500	10	7,500
Twefontein Coll. (Ord.)	+June		6		3,600				
	*March		19	60,000	11,400	25	15,000	25	15,000
Twefontein United	June	1	6	£130,500	7,830	6	7,830	—	—
Witbank	Feb.	26	12½	210,000	26,250				
	Aug.	27	15		31,500	27½	57,750	25	52,500
Welgedacht	June	5	3¾	156,750	5,878	3¾	5,878	3¾	5,878

* Final in respect of 1917. † Interim. ‡ Previous to acquisition of Twefontein and Henderson's No. 1 Colliery.

PERSONAL.

The list of certificates issued by the Mines Department for the month ending 31st December, 1918, is as follows: Mine Overseers' Certificates (Metalliferous): H. Bond, G. J. Cook. Mine Surveyors' Certificates: T. H. Nuttall, C. A. Pratt, T. Le R. Roskilly. Assayers' Certificates: S. J. Day, C. T. Messum.

* * * *

Mr. J. E. H. Lomas, a director of Oceana Consolidated, is now on his way to this country, and will take the opportunity of investigating the affairs and interests of the company on the spot. Mr. Lomas has had a long and successful experience in dealing with South African land, and will pay special attention to the company's farms.

* * * *

Mr. A. H. D. Cochrane, who is an expert agriculturist, and who until recently has been employed by the Imperial Government in agricultural work, is on his way to South Africa on an important mission, which is not confined to the affairs of one company, but will be extended to several. Mr. Cochrane has an intimate knowledge of farming in South Africa, and important results are likely to attend his present visit, just as they did a previous one some few years ago.

* * * *

Mr. Frederick William Lunau, of Christchurch Road, Streatham Hill, S.W., a director of the General Mining and Finance Corporation, Ltd. (London Committee), the London and Provincial Marine and General Insurance Co., Ltd., and the Sacke Estates and Mining Co., Ltd. (London Committee), who died on August 13, aged eighty-one, has left a fortune of the value of £172,511, with net personalty £170,174.

Mozambique Tin Discovery.

The Mozambique Company, it is announced, has received official information that in the district of Chimoio in its territory a tin mine has been discovered which is said to be important. It is situated in the same region where wolfram was lately discovered, south of Beira Railway line.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Shareholder."—(1) The Chartered Company shares are of the denomination of £1 each. (2) The whole question is under discussion in London now.

"L. L. B."—(1) Just a speculation. (2) Should be left alone.

"Capital."—The restrictions on dealings with London have not yet been removed, though some relief is expected.

"G. B."—(1) Yes. (2) 10 per cent. (3) About three years.

Sweetwaters Iron Works For Sale.

Attention is drawn to the advertisement in this issue of the Sweetwaters Iron Works, near Maritzburg, Natal. The property is a well-known one, and it is to be hoped that capital will be forthcoming to give it another chance.

Leeuwpoot Tin.

The report of operations at Leeuwpoot for the quarter ended 31st December, 1918, is as follows:—Stamps, 17 (including 2 Nissen); time run, 48·23 days; tons crushed, 5,797 short tons; concentrates won, 129 long tons. Average assay value of concentrates is 61·20 per cent. metallic tin. Average price of metallic tin on which the quarter's revenue has been determined is £242 8s. 6d. per ton. Estimated loss, £3,856 1s. 1d.; net adjustments in respect of previous shipments, £786 1s. 8d.; loss for quarter, £3,069 19s. 5d. The sum of £8,189 17s. 10d. has been expended for machinery, buildings, shaft sinking, etc. During the quarter a sum of £1,159 8s. for development redemption has been included in working costs. Owing to a serious outbreak of Spanish influenza at the mine during the quarter under review the time run only amounts to 48·23 days against an average of 83·90 days for the preceding six quarters.

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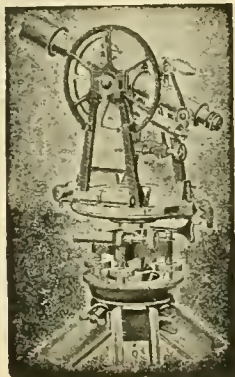
"Johannesburg to Durban in Three Hours."

[By KENNETH AUSTIN, W.P.O., Ministry of Munitions, M.S.A.I.E.]

THE changes which are likely to occur in methods of locomotion by aeroplane are of such importance that the recent offer of the *Daily Mail* prize of £10,000 for the successful flight from America to Europe, and the definite London to Paris passenger service, must awaken in the minds of thinking people the possibilities of having some aerial method of locomotion between the Witwatersrand and the coast. The establishment of a flying school within the Union will provide a large number of pilots, who will not be satisfied only to devote their time to the "service," but will extend their influence into the realms of private enterprise. It is quite clear in England that the Government will not take the control of the aeroplane industry, but will leave to "private enterprise" to develop the great possibilities in the commercial expansion of what should be, very largely, an interesting personal business. It is quite clear, however, that the State will not allow any kind of aeroplane to be flown by firms or individuals, unless such aeroplanes are properly made; and to prevent as far as possible any loss of life or property through a failure. Further, the State will undoubtedly insist upon the test of the efficiency of pilots, similar to those tests made by the Union Mines Department for engineers, managers and others who are in charge of human lives; and that some system of inspection and licensing aeroplanes will also inevitably have to be provided for. It is quite clear that none other than the Government departments could possibly undertake the duty of inspection, testing of materials, and assemblage of complete aeroplanes for use. There is no doubt that in the course of time the French, Italian, and possibly German aeroplanes will compete in South Africa with the British made machines, but it is (from the general public point of view) inconceivable that any such machines should be permitted to leave the ground for flying unless they had previously been subjected to Government inspection, and licensing for use in South Africa. Those who have had the pleasure of visiting the different aeroplane factories all over England must have come to the conclusion that the inspection work done by the Aeronautical Inspection Department of the Ministry of Munitions has been of priceless value in developing the best possible methods of production, and there can be no doubt that the British-made aeroplane is at the present time far ahead of anything turned out on the Continent, chiefly because of the A.I.D. The methods of inspection adopted by the A.I.D. have, as far as possible, been as perfect as human beings could make them; this, naturally, has involved some extra expense which has been more than repaid by the comparative absence of failures, and which has had the effect of greatly reducing the loss of life in the Royal Air Force. There is no doubt that this

subject must have had the attention of the Union Ministry of Defence; but, in addition, some further attention is required to be given to the subject of the conditions to be laid down by the Government in connection with the development of commercial transportation by means of aeroplane. Mr. G. Holt Thomas has recently advertised the fact that a regular passenger service will be established between London and Paris, the time occupied to be 2½ hours, the cost approximately the same as the first-class transport by train. "How long will it be before the Rand mining magnates and commercial princes leave after breakfast in the morning from Johannesburg, and arrive at the coast in time for lunch?" There is no question about the possibility of safety; it is simply a matter of arrangement, and a question of time, before such a service can be adopted. Previous to that being done, we draw attention to the matter in order that the necessary public regulations for such traffic should be drafted for general use and guidance of the "aeroplane travellers" who may be attracted by "Johannesburg to Durban in three hours."

In the Budget speech delivered by the Federal Treasurer (Hon. W. A. Watt) on the 25th September, it is stated: "The exportable output of zinc concentrates had been sold to the Imperial authorities for the period of the war and ten years afterwards. This sale covered 300,000 tons of concentrates annually. Our production of lead amounted to about 175,000 tons per annum, and the exportable output had been sold to the British Ministry of Munitions, with the exception of lead for the markets of the East. The surplus output of copper had also been sold until the end of this year to the British Ministry of Munitions. The value of the output per annum was approximately £5,000,000. An embargo had been placed on the exportation of tin ores and concentrates, and in future all locally-produced tin ore and concentrates would be smelted in Australia. The formation of a Tin Producers' Association had been approved, so as to protect the interests of all the producers. Local requirements would be provided for. The Association would remain under British control, and the Commonwealth Government would be represented on the board of directors. The Australian output of wolfram, scheelite and molybdenite had been acquired for the Imperial authorities, and it was gratifying that the production of these necessary ores had increased almost 100 per cent. compared with 1914. Considerable sums of money were being expended on up-to-date plants for the treatment and purification of these minerals. On the whole, the base metal industry of Australia was in a prosperous condition. So vital was the supply of iron and steel to the Commonwealth that the Government had taken an option of purchase over the Blythe River leases, situated near Burnie, Tasmania. With the production of refined metals in the Commonwealth, the subsidiary industries were being developed, such as the manufacture of plate and sheet iron, wire, white and red lead, zinc pigments, and sheet zinc. Bluestone was being produced, and white arsenic production was steadily increasing. The fabrication of arsenical compounds was important to the pastoral industry for sheep and cattle dips, and also to the orchardists for spraying compounds. The production of antimony had not advanced as it should have done, and plants for the treatment of auriferous antimonial ores must be installed in the near future. The production of bismuth was well established, and there was every prospect that within the next year there would be ample capacity for the treatment of all bismuth concentrates recovered in Australia."



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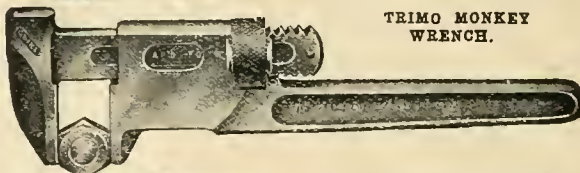
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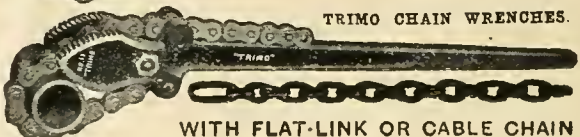


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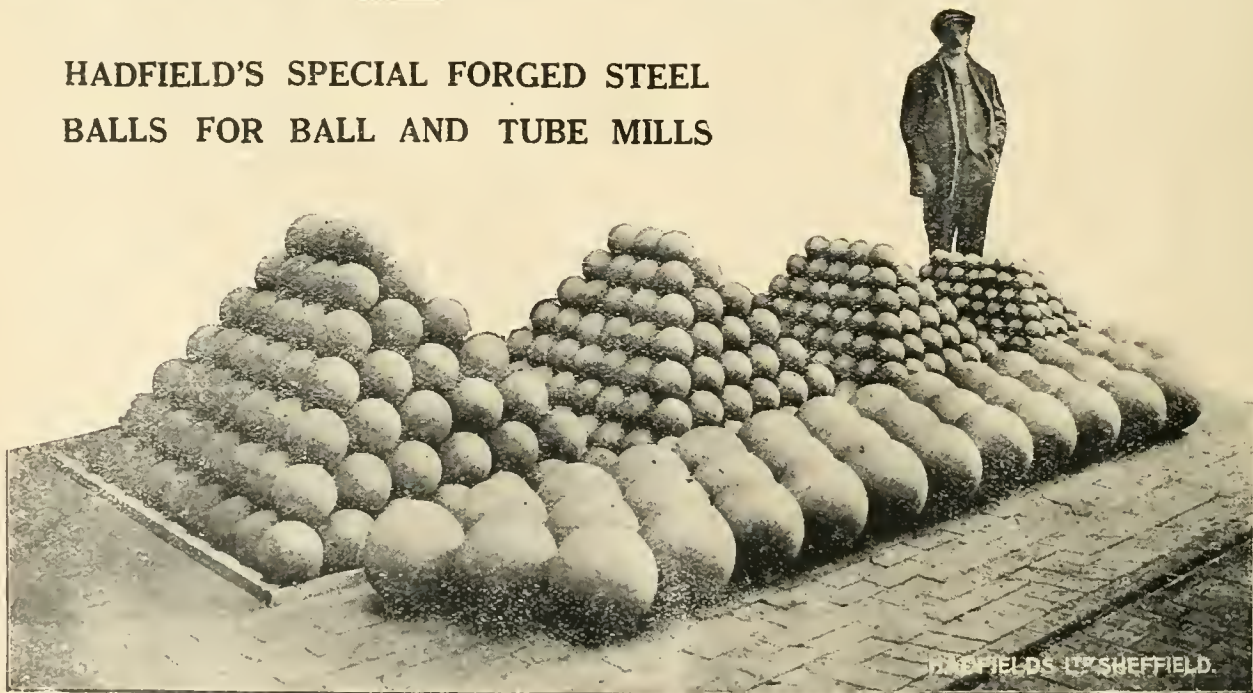
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THE DECEMBER GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of December:—

Company	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
Bantjes Cons. . .	90	3	7,130	3,039	£5,814	18/10-1
City Deep ...	A154	10	45,000	21,453	22,992	29/ 5-2
Con. Main Reef	220	6	43,420	15,425	4,833	27/ 5-1
Crown Mines ...	660	26	132,000	45,674	21,630	25/10-5
Dur. Road. Dp.	100	3	26,200	9,175	3,080	26/ 9-0
East Rand Prop.	600	23	115,000	32,439	11,802	21/ 5-1
Ferreira Deep ...	280	7	35,500	13,480	11,848	24/10-8
Geldenhuis Deep	300	7	47,000	13,108	*1,283	23/ 8-9
Knight Central ...	120	3	17,350	6,445	1,476	29/ 2-2
Modder B. ...	B104	8	57,000	26,728	52,236	20/ 6-3
New Modder ...	c236	15	70,000	37,519	85,062	20/ 3-3
Nourse Mines ...	180	5	31,200	10,467	*3,640	30/ 4-9
Robinson ...	180	6	36,100	10,417	4,467	21/ 6-0
Rose Deep ...	300	7	44,300	12,121	5,663	20/ 2-2
Village Main R.	130	4	17,600	6,092	2,506	25/10-2
Wolluter ...	120	1	27,300	8,783	5,278	22/11-0
Village Deep ...	180	7	46,800	15,335	6,662	24/ 3-8
Wit. Deep ...	200	5	26,400	7,685	*2,577	26/ 1-9

Tls. & averages 4154 149 825,300 295,385 237,879 24/ 0-7

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.

C Includes 56 Nissen stamps.

* Loss.

East Rand Proprietary Mines, Ltd.—It is hoped to restart development on a somewhat larger scale in the course of the next two or three weeks.

Bantjes Consolidated Mines, Ltd.—The clean-up of the underground workings and surface accumulations was continued and anticipated to be completed in January.

General Note.—The results of all mines have been affected by the continued acute shortage of native labour due to the influenza epidemic, the numbers employed during December being considerably lower than for November. Recruiting in Union Native Territories is gradually improving but has been temporarily suspended in East Africa.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of December, 1918:—Central Mines: Tons crushed, 2,850; yielding 831 fine ozs. Elandsdrift Mine: Tons crushed, 700; yielding 324 fine ozs. Vaalhoek Mine: Tons crushed, nil. Estimated value of month's output, £4,862. Estimated loss for the month, £7,776. Labour supply gradually increasing; improved results expected for January.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of December: Tons crushed, 1,318; yielding 527 fine ozs.; estimated value of month's output, £2,186; estimated loss for the month, £1,276. Labour supply gradually increasing; improved results expected for January.

New Heriot.

The result of the New Heriot Company's operations for the month of December, 1918, was as follows:—Tons milled, 11,100; gold recovered, 3,870 ozs.; profit, £791.

Barnato Group.

The results of operations of the Barnato group for December are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	37,400	£47,586
Ginsberg ...	75	12,000	12,791
Government Areas ...	180	93,000	171,837
Langlaagte Estate ...	200	44,190	54,781
New Primrose ...	90	17,800	15,993
New Unified ...	60	13,100	12,164
Randfontein Central ...	600	118,200	128,363
Van Ryn Deep ...	90	40,800	94,389
Witwatersrand ...	215	33,300	37,850

Totals and averages ... 1610 409,790 £575,754

November totals ... 1770 439,460 £619,254

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ...	£38,751	20/722	£9,013
Ginsberg ...	12,022	20/037	847
Government Areas ...	102,238	21/987	70,142
Langlaagte Estate ...	41,669	18/858	13,232
New Primrose ...	14,785	16/612	1,301
New Unified ...	9,719	11/839	2,482
Randfontein Central ...	140,257	23/732	*10,945
Van Ryn Deep ...	47,244	23/159	48,104
Witwatersrand ...	33,764	20/279	5,114

Totals and averages ... £440,449 21/496 £139,290

November totals ... £463,678 21/102 £159,317

* Loss.

Monthly Gross Profit for 1918.—January, £190,628; February, £159,225; March, £136,496; April, £164,186; May, £179,975; June, £180,141; July, £188,103; August, £186,284; September, £200,879; October, £170,688; November, £159,317; December, £139,290.

Profits of companies adversely affected by native shortage. Randfontein Central, in addition, had strike of white employees at Block A. shaft lasting a fortnight.

Consolidated Mines Selection Group.

The following are the results of operations for the month of December:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines ...	110	44,000	26/ 1-810
Springs Mines ...	80	28,800	25/ 9-023
Totals and averages ...	190	72,800	25/11-917

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines...	£83,972	38/ 2-026	£26,440	12/ 0-216
Springs Mines ...	67,282	46/ 8-687	30,199	20/11-664

Totals & averages £151,254 11/ 6-639 £56,639 15/ 6-722

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Albu Group.

The December operations of the producing mines of this group were as follows:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West	60	10,700	£13,647
Meyer and Charlton	75	13,635	15,697
New Goch	80	15,450	13,767
Rodepoort United	80	21,000	25,250
Van Ryn Estate	140	32,300	28,255
West Rand Consolidated	100	28,400	33,395
	535	121,185	£130,011

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	25.51	£10,713	* £2,934
Meyer and Charlton	23.02	39,215	23,518
New Goch	18.17	13,266	*501
Rodepoort United	21.04	22,790	*2,460
Van Ryn Estate	17.49	32,318	4,063
West Rand Consolidated	23.51	32,000	*1,395
		£150,302	£20,291

* Loss.

The operations of all the mines of the group are seriously affected by the continued shortage of native labour.

Aurora West.—Additional rock drills should arrive within the next week, which will enable the tonnage to be increased.

Union Corporation.

Results of operations on the producing mines of this group for the month of December:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary	100	42,500	£63,147	29/ 8
Modder Deep Levels	70	40,900	84,331	41/ 3
Princess Estate	60	17,500	21,979	25/ 1
Totals	230	100,900	169,457	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary	£42,025	19/ 9	£21,122	9/11
Modder Deep Levels	36,748	18/ 0	47,583	23/ 3
Princess Estate	27,265	31/ 2	*5,286	6/ 1
Totals	£106,038	—	£63,419	—

* Loss.

Princess Estate.—The continued shortage of native labour again adversely affected this company's results. The native labour position is, however, slowly improving.

Swaziland Tin.

The following are the results of the operations of this company for the month of November, 1918:—Output of tin, 21.5 tons of 70.9 per cent. concentrate; estimated working loss, based on tin at £200 per ton, £257; adjustments on previous shipments, £386; total loss, £643. The November operations were adversely affected by the influenza epidemic. Conditions at the mine are now normal.

Manicaland Gold Output.

The mineral output of the Territory of the Companhia de Mocambique (Manicaland) for the month of November, 1918, is as follows:—Alluvial: Gold won (fine), 231 ozs. 9 dwts.; cubic metres dredged, 15,007; value, £959 9s. 2d. Copper: Copper declared, 7.5 tons; value, £750.

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of December of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs	Total Profit
Simmer and Jack	320	7	45,700	12,616	£7,303
Robinson Deep	90	6	39,400	12,889	*1,450
Knights Deep	400	11	78,000	14,437	*7,732
Simmer Deep	220	10	43,100	11,399	1,221
Jupiter	80	5	23,200	6,818	2,384
Sub Nigel	30	2	9,700	6,061	7,590

Totals 1140 41 239,100 64,220 £9,310

* Loss.

The sundry revenue included in the above total declared profit or loss is as under: Simmer and Jack, £1,500; Knights Deep, £209; Simmer Deep, £300; Jupiter, £471; Sub Nigel, £21; total, £2,510.

Gold Reserve.—Simmer and Jack, 1,100 ozs.; Sub Nigel, 3,231 ozs.; total, 4,331 ozs.

Shortage of native labour was severely felt by all the companies, but there are indications of improvement in this respect.

Village Main Reef.

It is announced that no further dividend will be paid in respect of the operations of the Village Main Reef G.M. Co. for the current year.

The South African Rubber Manufacturing Co., Ltd.

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A PIONEER ON THE PROGRESS OF SOUTH AFRICA.

A Cheerful Outlook—Mr. J. B. Taylor's Review and Forecast.

A REPRESENTATIVE of the *Cape Times* has had an opportunity of a talk with Mr. J. B. Taylor, who returned some time ago from a prolonged residence in England. Since his return, Mr. Taylor has travelled all over the Union, and has begun a new South African life by purchasing an extensive farm at Saldanha Bay, where he intends settling down with his sons. The conversation turned chiefly on the contrast between then and now, very much in favour of the now. "I find South Africa," said Mr. Taylor, "very different to-day. I knew it in the days of mines and prospecting for mines, when people talked of nothing but gold and diamonds. Share speculation was rife, and farming badly neglected. The farmers were mostly transport riders. To-day I find the people of South Africa intent on farming and industrial development, and more prosperous than they have ever been in consequence. I have visited many countries since I left South Africa, including America, Canada, India, Ceylon, the whole of Europe, and parts of Asia, Palestine, Egypt and Northern Africa. Nowhere have I seen a country which offers greater or even as great attractions and rewards to the settler than are offered by South Africa. I am thoroughly convinced that, given peaceful development, South Africa is going to take a very prominent part in the future, and will attract men and capital from every part of the civilised world. Climatically, we have the advantage over every country I have seen. It is a white man's country. Twenty-five years ago everyone wanted to get rich quickly and go away. To-day the people in South Africa are content to make South Africa their home. Children are being educated here instead of being sent abroad. Instead of going to Europe for their holidays, I find that the people are content to visit their own seaside resorts and watering places, rightly spending their money in the Union. In touring the Union I have been surprised to find what changes have taken place. My old mining friends, scattered all over the country, who, when I left here used to talk of nothing but mines; shares and prospecting development, now seem to think of nothing else but farming. The topic of conversation is up-to-date farming, motor-traction, steam ploughs, new grasses, fodders, silos, dairy farming, ranching, blood stock, irrigation, water conservation, boring, etc. In the large centres throughout the Union men's minds are active in the direction of industrial development. When I left South Africa we had a few small sugar factories—practically nothing was being made in South Africa. Butter, cheese, milk and most of the necessities of every-day life were being imported. To-day we have large sugar estates and refineries capable of satisfying all our requirements and preparing for export. The by-products, formerly wasted, are being turned into motor spirit, ether, fertilizers, wax, etc. Tea plantations, jam factories, dairies, dried fruits, wines, beer, matches, leather boots, blankets, tweeds, iron, carbide, fertilizers, paints, condensed milk, bacon, fish canning, cement, piping, tiles, furniture, tobacco—all are being made in the Union, and give promise of making us self-supporting. One has only to look at the old import figures to realise what it will mean for the Union to have all this money kept in the country. Water conservation and irrigation schemes promise to give us a large number of contented settlers. These will add greatly to our output, and enable South Africa to become an export country. When I think of the days when one travelled through South Africa along the transport roads—seeing dead cattle everywhere on the roadside and thousands of vultures all over the place—I marvel at the change. It is true railways do most of the transport now, but it is nevertheless very striking that, in the whole of my recent travels through the Union, covering many thousands of miles by motor, I have not seen a single vulture, and only one dead animal on the roadside. Cattle diseases have been checked, and look like being stamped out. Instead of the

old Afrikaner breed of stock, one sees some herds of Herefords, Shorthorns, Ayrshires, Black Angus, Frieslands, Devons, and the best breeds of sheep; whilst the quality of the horses, mules and donkeys has been greatly improved. When one considers the trials and tribulations that South Africa has passed through in recent years, and realises that in spite of all sorts of adverse conditions, what progress has been made, then there seems to be no limit to what may be done under more peaceful and prosperous circumstances. Men and women of the Union have but to unite to build up a great South Africa. Give politics a rest. I have no doubt about the future prosperity of South Africa—none whatever. I am firmly convinced South Africa will become self-supporting, and unity will reign among the people. Evil influences have been at work within the Union, just as actively as they are at work throughout Europe to-day. It cannot last in South Africa, because our real differences are nil. Though much has been done of late years, there is still a lot to do. Forestry and fisheries may be named as two urgent matters for attention. Trees grow everywhere you plant them, the sand flats and the mountain sides cry out to be planted. The ocean teems with fish life, and fortunes are being made by those who hold the monopoly for supplying our wants. Notice has been given by one large fishery company that from January 1 the price of fish will be 6d. per pound. Just think what it means. When I left South Africa you could buy a 20 lb. Cape salmon for 1s. 6d. It is now proposed to charge 10s. How many people are there in the Cape Peninsula who can pay 10s. for geelbek? The watering places within the Union deserve more attention, Caledon, Aliwal North, Warmbaths, Port Elizabeth, Montagu, and other well-known springs have great curative value. These springs are an enormous national asset. When cheap and fast passages can be made from Europe, it is reasonable to believe that a great many people will come to our watering places to spend the English winter—the tendency will be to spend our money within the Empire. It is perhaps a pity that the hospitals erected during the war for troops were not built around some of our watering places. The patients would have received much benefit from the waters, and the buildings would have been of permanent use to the community. I was very much struck by the magnitude of the work done at Sundays River for bringing on water for irrigation. Sir Percy Fitzpatrick and his colleagues on the Board of the Sundays River Settlement Co. deserve the greatest possible praise for what they have done to induce land settlement in the valley. All the conditions are favourable for citrus, fig, and other fruit growing. Lucerne thrives, the climatic conditions are good—no extremes of heat and cold. In fact, Sundays River is an ideal place for intending settlers who wish to make South Africa their home. They cannot fail to prosper if they work and apply themselves diligently and intelligently to cultivate the rich soil in Sundays River Valley. There are many places in the Union where similar work can be done, and advantage taken of the wonderful Karoo soil, rich valleys, and an incomparable climate and geographical position. Wherever I went in every Province of the Union the poor white problem loomed very large. Coming direct from Europe, where every property holder has to pay a poor rate, it naturally occurred to me that a possible solution of our poor white problem might be the application of a poor rate, with the proceeds applied to educate the children of the poor and teaching them a trade. It may mean compulsion, but it would be worth it, if in a generation we could do away with the evil. Although I have not mentioned ranching, I am fully alive to the great future for stock rearing within the Union and also in Rhodesia, where land can be acquired on very easy terms. If evidence is wanted that South Africa will, in a very few years, export meat, the intending rancher has only to look at the figures officially published showing the enormous increase of stock during the past ten years."

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Question of German Trade.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—In your issue of December 28 there appears under the heading of "Trade with Germans" a letter which is very clearly written by one who knows of what he writes in regard to German cruelty and brutality. It certainly will do no harm to reiterate and keep on reiterating the fact that the Hun has admirably proved himself to be the Blonde Brute of Creation. Every thinking person in this world must realise that. I often think indeed that the Hun must realise it himself. I have no personal knowledge of the Germans in Europe during the past four and a half fateful years, but I have had considerable experience of the kindly Teuton and his methods in his late African Colonies, both during and before the war. I know from what I have seen with my own eyes that the German treatment of his late native subject races has always been the essence of cruelty and injustice, and that during the campaigns in South-West and East Africa the Hun has excelled himself in his diabolical and systematic brutality. Had I the space I could tell you of scores of instances of the most terrible and revolting "frightfulness" imaginable. The Germans undoubtedly have placed themselves outside the pale of

civilization, and ethically your correspondent's view that the whole nation of Huns should be treated to a rigorous trade boycott is a wholly correct view to take. But would it profit us to impose this commercial penalty upon a race of people who, though brutes at heart and murderers of women and children, are essentially industrious, scientific and studious? I think not. My view is that we can only recover from Germany a portion of the vast sums of money which the Allied nations have expended on this terrible war by re-establishing German industries and fostering German trade, but always to our own advantage. If we cripple industrial Germany the vast damage wrought by their now defeated armies in France and Belgium, in Italy, in the Balkans and in Russia will not be recoverable from the men who did this foul thing. Therefore I say let Germany slave for the nations she has made suffer. Let the German become the serf of the world until the material damages of the war have been recovered. Let us foster German industrialism—at the point of the bayonet if necessary. Let us encourage Germany to erect factories so that we may ring them in with cannon if it be required. Let us reorganise Germany and then exact from her all the profits of her toil for a century or two centuries to come.—Yours, etc.,

" BUTLANIA."

Capetown, Jan. 4, 1919.

In concluding its interesting series of articles on the future of mining shares, the *Financial Times* says: "The outlook for the mining markets in the early days of peace is, in our opinion, obscure and uncertain."

The Future of the Mining Market.

Most good shares have risen in recent months to prices which fully discount their immediate dividend outlook, while many bad ones have appreciated to a level which discounts the prospects of peace bringing a mining millennium. Australia and South Africa have bought freely of shares in their own mines which they will possibly want to resell here when the Stock Exchange is no longer working under the Emergency Regulations. Home business men will in many cases desire to withdraw their capital from the Stock Exchange to expand their factories and other works. Moreover, there is still an enormous enemy-holding, mainly of South African mining shares, to be dealt with. Happily there is probably no need to fear—especially after the recent relapse in base-metal shares—a serious slump in any direction. The system of cash dealings under which Stock Exchange business has been conducted ever since the re-opening of the House in January, 1915, should obviate that risk."

* * * *

The secretary of the Globe and Phoenix Gold Mining Company has issued the following circular to shareholders: "The response to the proposal of the board in their circular to form a development company is now to hand. 1,133 shareholders have expressed their approval, and only 81 have expressed their disapproval. In view of this overwhelming assent the board have proceeded to register a development company under the name of Phoenix Mining and Finance, Ltd. The object for which this company has been formed was set out in the above-mentioned circular. The board wish only to emphasise the fact that the practical management will be primarily in South Africa, where various propositions are already under consideration. The services of Mr. D. P. McDonald, the eminent geologist, who was one of the principal advisers and witnesses in the recent litigation, have been secured, and he will shortly sail for Rhodesia. Your present board will form the first

directors of the new company, Mr. Tom Priest will act as secretary, and Messrs. Price Waterhouse & Co. as auditors. The new company being a purely domestic concern in which only the Globe and Phoenix Company and its shareholders are being offered shares, it has not been considered necessary to obtain the sanction of the Treasury to this issue. The new company will not be burdened with any promotion money, commission, brokerage or other initial expenses beyond actual formation costs. This invitation to subscribe is addressed only to shareholders, whose applications need not, however, be *pro rata*. Any surplus of applications will, however, be allotted on a *pro rata* basis. The capital of the Phoenix Mining and Finance, Ltd., is £250,000 in 250,000 shares of £1 each, payable 2s. 6d. on application, 2s. 6d. on allotment and the balance in calls not exceeding 5s. each at intervals of not less than three months."

* * * *

Speaking at the last monthly meeting of the South African Institution of Engineers, Sir Evelyn Wallers, President of the Transvaal Chamber of Mines, expressed appreciation of the united effort put forth during the war by those engaged in the mining industry. From the men at the head office and on the mines with whom he had the pleasure of being associated, he knew of the extraordinarily valuable work that had been done for the mining industry.

Lessons of the War.

Continuing, Sir Evelyn Wallers said, *inter alia*:—"I am speaking not only of resident engineers but of foremen smiths who have shown me a variety of things that they have conceived and executed in a time of stress. The value of the work done appears to me to lie in the opportunity afforded of co-ordinating the information and the experience derived by those various men. It seems to me that we do rather neglect in the industry the value of getting into a co-ordinated form the various experiences of some of the technical men on these fields. Each group, each mine, is inclined to go on its own, has been more inclined than is the case now. I agree with a remark that has been made that if we can get some method, or the right set of individuals, to collect the information, the value of that information will be infinitely greater than any small amount of expense in collecting and paying those people."

Rhodesian Section.

RHODESIAN MINERAL OUTPUT IN DETAIL.

WE have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of November, 1918, with comparisons and values:—

MATABELELAND.

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
BULAWAYO DISTRICT.				
Abercorn (W. J. Lane) ...	5	295	154.78	642
Do. (sands) ...	—	—	2.73	11
Algoa 2 (Criterion G.M. Co., Ltd.)	5	136	22.65	94
Do. (slimes), September ...	—	—	1.69	7
Allee (R. J. Howe) ...	2	140	22.94	95
Annamona (Rhodesia, Ltd.) ...	3 1P	208	—	—
Do. (sands) ...	—	58	176.33	731
Antelope G.M. (Rhod.) Co. ... 2BM 1T 2P	—	630	235.73	1000
Balmoral (W. Arbery) ...	5	500	74.62	309
Bluff (Clement Dixon) ...	2	22	18.02	75
Cam Stick (Iron Duke Synd. No. 2)	3	90	24.49	102
Confidence (A. D. Hall) ...	5	125	22.63	94
Durban (Durban Synd.) ...	5	338	111.39	462
Do. (sands) ...	—	254	49.44	205
Eagle 2 (E. Sutherland), pannings	—	—	4.60	19
Eagle Hawk (T. Berwitz) ...	5	290	99.72	413
Excelsior (R. Aserman), October ...	5	125	62.41	259
Fernando (E. A. Norval) ...	10 2P	1100	641.21	2658
Do. (sands) ...	—	1100	317.77	1317
Germania (A. G. Haddingham) ...	2N 2P	900	664.43	2755
Do. (concentrates) ...	F	—	150.06	615
Horn (Horn Reef Synd.) ...	5 1P	470	—	—
Do. (sands) ...	—	340	189.81	787
Jessie (Jessie Tributors) ...	10 2P	817	213.56	885
Do. (sands) ...	—	424	28.93	120
Lonely Reef G.M. Co. ...	10 3T	2550	1461.72	6060
Do. (slimes) ...	—	2550	1731.84	7179
Marlish (C. A. Abbot) ...	2	35	4.46	18
Mount Rosa (R. J. Maidwell) ...	3	16	6.23	26
New Eclipse (J. R. Stewart) ...	5	790	417.73	1732
Do. (sands) ...	—	500	26.20	109
Petrel (E. Warren) ...	5	210	66.66	276
Red Rose (F. C. Barrett) ...	5	33	56.33	234
Rewi (Intabamanda Synd.) ...	5	300	136.41	566
Rosy Morn (J. W. Rose), pannings	—	—	.51	2
Sabi (Fletcher & Williamson) ...	20	340	65.95	273
Stock's Luck (E. W. Bosomworth), September	5	420	87.12	361
Do. (sands) ...	—	540	40.81	169
Wainui (Moll & Co.), September ...	(3)	40	18.81	78
Do. October ...	(3)	34	13.58	56
Do. November ...	3	90	39.15	162
Wit Boy (Wit Boy Synd.) ...	5	102	36.27	150
Woodstock (Clement Dixon) ...	(2)	22	58.26	241

Bulawayo District Total 7,570.33 31,400

GWELO DISTRICT.

All British (H. J. Lea), sands ...	—	35	17.83	74
Ardpatrick (B. Fray) ...	3	143	104.25	432
Babs (Beach & Boby) ...	11	247	160.50	665
Bell (Austen & Eaton), clean up ...	—	—	2.34	10
Bonsor B 323 (C. Brunton), clean up, September	—	—	28.94	120
Bull Dog (J. Rainsford) ...	2	10	1.85	8
Chicago 2 (Beaton & Baldwin) ...	3	90	22.33	92
Chimborazo (Wonderland Trib. Syn.)	5 1P	169	63.53	263
Do. (sands) ...	—	147	27.61	115
Commonage (H. W. Gray) ...	T	372	52.00	215
Connemara (Connemara Synd.) ...	20	1385	117.14	486
Do. (sands) ...	—	1185	311.64	1252
Danga (Wonderland Trib. Synd.)	5 1P	130	49.87	207
Dream (Alasham Synd.), clean up	3	20	22.76	94
Dunraven B 329 (C. Brunton), clean up, October	—	—	16.48	68
Falcon Mines, Ltd. ... 20N 1T	—	3853	1538.40	6461
(Copper and Silver values not given.)	—	—	—	—
Fed Up (A. Malcolm) ...	5 1P	190	152.96	634
Gaika G.M. Co., Ltd. ... 1C 1T 5	—	1914	384.33	1630
Do. (sands) ...	—	2448	536.79	2277
Glen Arroek (Glen Arroek Synd.)	5	150	152.57	632
Glen Rosa (C. Brunton), clean up	—	—	17.12	71

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Globe & Phoenix G.M. Co., Ltd.	4012P	2054	2061.07	8657
Do. (sands), clean up ...	—	—	669.30	2811
Do. (slimes) ...	—	873	520.53	2186
Gothic (Murray & Kennedy) ...	10 1P	445	76.03	315
Jessmar (T. Malcham) ...	—	40	26.95	112
Jutland (H. C. Phillips) ...	3	15	17.14	71
Loyalist (B. Bertoldi), sands ...	—	607	18.61	77
Moss (James & Worthington) ...	5	400	286.82	1189
Robin Hood (Gaika G.M. Co.) ... (5 1P 1T)	—	177	185.80	788
Royalist (J. Austen) ...	5	110	62.93	261
Second Trial (J. Rainsford), Oct.	2	12	3.38	14
Smith's Pocket (R. C. Smith), Oct.	5	170	20.12	85
Do. (sands) ...	—	450	13.56	56
Do. do. November ...	—	90	6.25	26
Tabekwe (A. N. Tyrell), sands ...	—	1000	33.10	137
Do. (T. Kerr), clean up (sluicing)	—	46	29.88	124
Trixie (S. Levin), October ...	5 1P	300	122.94	510
Veracity (L. R. Evans) ...	5	200	60.09	249
Wanderer (Selukwe) G.M., Ltd. ... 4GR	—	1180	395.81	1641
Yauke Doodle (C. Brunton) ...	F	—	11.01	161

Gwelo District total 8,432.89 35,319

MASHONALAND

HARTLEY DISTRICT

Acorn (Anzac Synd.)	5	114	—	—
Do. sands (final clean up)	—	200	70.84	294
Bucks (H. F. Wilson), Oct.	(2)	194	24.03	199
Do. November ...	5	98	12.87	53
Cam & Motor G.M. Co., Ltd.	RP	11266	3174.27	13459
Do. (slimes) ...	—	1506	111.32	472
Do. (under declared), October.	—	—	10.00	—
Do. adjustments, Dec., 1917.	—	—	—	—
Do. Nov., 1918 ...	—	—	2.20	23
Cissy (J. E. F. Poulton), October	(2)	36	20.65	85
Do. November ...	2	56	10.04	166
Chadshunt (C. H. Wheildon), September and November	5	455	257.42	1067
Do. (sands) ...	—	200	55.30	229
Eiffel Blue (Willoughby's Con. Co., Ltd.)	10	842	254.43	1055
Etna & Tsessesbe (Macfarlane and Chesham) ...	C	354	96.75	401
Enney Ext. (E. G. Goodyer), clean up	—	—	68.41	283
Do. (sands) ...	—	50	19.84	82
Do. slags ...	F	—	13.51	54
Frog (C. Somerset) ...	2	134	31.63	131
Glasgow Mines, Ltd., Oct. Nov. ...	5	375	116.67	184
Do. (sands) ...	—	223	36.04	149
Golden Valley (John Mack & Co.)	10 1P	1081	298.88	1239
Do. (sands) ...	—	990	155.65	645
Glendarra W. Ext. (C. S. Marks), October	2	20	1.18	5
Glendevon (J. Young) ...	(2)	45	13.68	57
Horseshoe (C. E. F. Hussey)	100	121.28	503	—

'Phone 4673.

Box 3162.

OSBORN'S

PATENT

"W & S" TUBE MILL LINER

Write or 'Phone for Stock List.

SAMUEL OSBORN & Co., Ltd., SHEFFIELD and JOHANNESBURG

	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
Hope (Alexandra Synd. No. 2)	5	300	70.14	291
Do. (sands)	—	210	24.80	103
Inkerman (I. J. Minaar)	5	334	74.78	310
Do. (sands)	—	284	22.31	92
Jockie's Luck (Mrs. Sarah Smith)	2	30	21.52	89
Kanyemba (Kanyemba Syndicate), October and November	10	420	221.51	918
Do. (sands)	—	280	51.33	213
Kelvin (Westoc Synd.)	2	60	19.45	80
Lion (J. Baker), October	(2)	120	22.18	92
Do. November	2	120	22.83	95
Mountain Dew (A. & J. Milne) ...	10	1040	201.76	836
Owl (A. Rolfe)	10	754	227.72	944
Do. (sands)	—	715	151.89	630
Do. (slags)	F	—	19.66	79
Old Dop (H. F. Wilson)	—	25	2.55	10
Pickstone G.M. Co.	10 1T	384	—	—
Do. (sands)	—	384	167.68	695
Pomposo (J. Knott), Oct. and Nov., sands	—	850	89.91	373
Revie (Ambrose & Aitken), Oct., Nov.	5	1320	156.30	648
Do. (sands)	—	1000	70.12	291
Shepherds (Beggie & Jackson), Oct.	(10)	120	29.76	123
Do. (sands)	—	323	74.20	307
Do. November	10	558	118.39	491
Do. (sands)	—	495	81.52	338
St. Louis (A. J. van Breda)	2	138	36.72	152
Solpex (E. Sedgwick)	(5)	28	33.68	140
Step 1 (W. Miller)	2	80	38.96	162
Tiger (Clark & Blackburn), Oct. & Nov.	5	263	55.03	228
Tsessebe E. Ext. (Ullyett & Secar)	5	152	124.70	515
Do. (sands)	—	410	50.06	208
Tel-el-Kebir (J. G. Volk), Oct., sands	—	300	37.89	157
Do. November	5	150	26.87	111
Do. do. (sands)	—	100	50.79	211
Washington (I. J. Minaar)	(5)	166	37.39	155
Do. (sands)	—	141	11.15	46
What Cheer (H. Moser), Oct. & Nov.	10	465	140.54	533
Do. (sands)	—	425	42.82	178
Welcome Friend (H. F. Fry), panings	—	—	4.98	21
Hartley District Total ...			7,640.78	31,952

	No. of stamps.	Tons treated	Yield. ozs.	Value £
LOMAGUNDI DISTRICT.				
Alluvial (2 producers)	—	—	27.95	116
Anglian (Schapke & Quarrie)	5	113	37.89	157
Angwa (F. L. Stauden)	5	432	52.38	217
Crescent (Crescent Synd.)	F	81	11.64	47
Eldorado Bkt. G.M. Co., Ltd. ...	20 2C	3358	1551.56	6581
Do. (sands)	—	1664	—	—
Do. (slimes)	—	1439	539.43	2288
Gloria (H. H. Tallantire)	5	95	15.85	66
Maggiemac (J. McMurdon)	5	312	70.66	293
Do. (sands)	—	300	39.08	162
Mediterraneo (J. Perbat), sluicing dumps	—	—	17.49	72
Silverside (Silverside Synd.) ...	F	15	—	—
Lomagundi District Total ...			2,363.93	9,999
MAZOE DISTRICT.				
Firefly (C. Laland)	3	33	11.73	48
Iron 1 (J. M. Laing), October ...	5	910	72.33	300
Do. (sands)	—	340	48.74	202
Maori Chief (D. McLean)	5	132	28.72	119
Mopani (Mopani Synd.)	2	38	36.37	151
Promoter 1 (F. C. Croxford) ...	C	2300	51.60	214
Do. (sands)	—	1320	94.79	393
Rothschild (Cunningham & Allison)	10	300	192.89	800
Victory (G. C. N. Southey)	2	70	20.10	83
Mazoe District Total ...			557.27	2,310
SALISBURY DISTRICT.				
Alluvial (R. Crosland)	—	—	1.65	7
Beatrice (New Beatrice G.M. Co., Ltd., slimes	—	500	42.11	175
Cross Your Luck (W. A. Hoole)	5	80	14.87	62
Enchred (W. C. Harrison)	8	580	130.77	542



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JOHANNESBURG.

	No. of stamps.	Tons treated.	Yield. ozs.	Value £
Joyce (Ellsmoor & Wyper)	5	189	29.92	124
Left Bower (B. G. Byerley)	5	192	81.18	337
Mollie A (Mollie A. Synd.)	5	91	38.69	160
Planet (Planet Mine Tribute), October clean up	—	—	105.81	439
Do. slimes, November	—	700	96.35	399
Radnor (L. Hyland), sands	—	500	13.86	57
Shamva Mines, Ltd.	56N 10T	27889	1155.27	1898
Do. (sands)	—	12275	—	—
Do. (slimes)	—	11768	3472.37	14723
Southern Cross (Arab Syn.), sands	—	—	24.04	100
Trio (Trio Synd.)	5	180	146.96	609
Salisbury District total			5,387.10	22,769

UMTALI DISTRICT.

Gem (J. Buchanan), October	5	938	29.91	124
Do. (sands)	—	938	95.16	394
Kent Mines, Ltd., adjustments, April, 1918	—	—	—	33
Liverpool (R. G. Snodgrass)	5	350	49.83	207
Do. (sands)	—	130	40.48	168
Lucknow D.B.I.E. (Toronto Synd.) October	2N	270	38.72	160
Do. (sands)	—	90	16.63	69
Do. (concentrates), November	F	—	22.22	89
Rezende Mines, Ltd.	40	1700	619.01	2626
Do. from reserves	—	—	992.62	4212
Do. (sands)	—	1167	192.10	815
Do. (slimes)	—	301	128.96	547
Do. (concentrates)	—	61	336.34	1427
Do. stay	—	—	97.55	414
Umtali District Total			2,659.53	11,285

VICTORIA DISTRICT.

Cheer Up (S.A. Taylor), Oct. sands	—	320	11.23	47
Count (C. D. Currie)	2	10	23.06	98
Empress (S.A. Pros. & Con. Synd.)	8	160	67.45	279
Victoria District Total			102.34	424

(P) Grinding Pan, (BM) Ball Mill, (T) Tube Mill, (H) Hunting-ton Mill, (GR) Gates Rolls, (B) Ball Mill, (Pn) Pneumatic Stamp, (N) Nissen Stamp, (C) Chilian Mill, (RP) Roasting Plant, (F) Treated at Falcon Mine, (WM) Waterfall Mill, (LM) Lane Mill.

Pretoria Portland Cement Co.

The Pretoria Portland Cement Company has declared for the half-year ending December 31, 1918, a dividend of 10 per cent. (two shillings per share) free of income and dividend tax.

A Durban Water Supply Scheme.

At the last meeting of the Durban Town Council, Mr. Hooper said when the foundations for the proposed Camper-down Dam were found unsuitable, a careful survey was put in hand of the Umhlaas River between the intake and the old dam site in order to ascertain whether a suitable site for a dam could be found lower down. Two possible sites were located, and a special committee were appointed to obtain options of purchase over any properties affected. So far as certain properties are concerned, legislative authority will be necessary to prevent undue advantage being taken of the corporation in the matter of price. Provided a suitable foundation exists, the site selected will be an ideal one for a dam, and the Acting Borough Engineer and his assistant, Mr. Serridge, are heartily to be congratulated. The main advantages are a more direct pipe-line; greater head, thereby eliminating pumping; considerably larger water shed; saving the present loss in evaporation and seepage of water on route to the intake; and a storage capacity sufficient to provide water for Durban with its growing requirements for the next 25 years. The site has been inspected by both of the consulting engineers and approved by them subject to the foundations proving suitable, which can be determined only by sinking a number

SUMMARY OF PRODUCTION, NOVEMBER, 1918

Gold—

November, 1918	£145,459
October, 1918	£136,780
Increase	£8,679
November, 1917	£275,829
November, 1918	£145,459
Decrease	£130,370

Silver—

October, 1918	£1,980
November, 1918	£1,278
Decrease	£702
November, 1917	£1,889
November, 1918	£1,278
Decrease	£611

Base Mineral Production—

October, 1918	£37,018
November, 1918	£30,255
Decrease	£6,763
November, 1917	£42,469
November, 1918	£30,255
Decrease	£12,154

Total Mineral Production—

November, 1918	£176,992
October, 1918	£175,778
Increase	£1,214
November, 1917	£320,127
November, 1918	£176,992
Decrease	£143,135

The Monarch Mine Changes Hands.

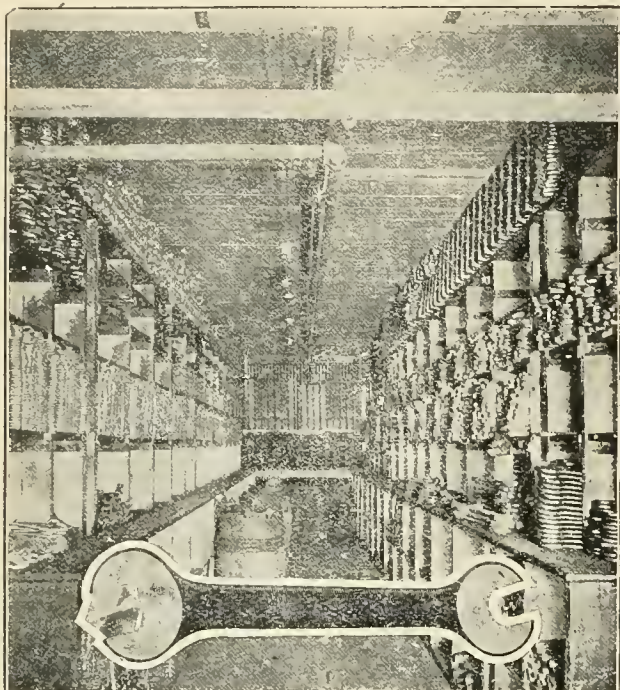
The Monarch Mine in the Tati Concessions has been sold to an Eastern Rand syndicate.

of shafts, and work is proceeding as fast as circumstances permit. The whole scheme will entail an outlay of probably £500,000. It does not mean scrapping all the existing water works.

Eileen Alannah.

The report of the Eileen Alannah Mining Company for 1917 states that profit and loss account shows a debit balance of £3,894 and provision has been made for income tax of £1,819. These two amounts being deducted from the balance brought forward leave a credit to be carried forward of £8,281. During the year 48,066 tons were crushed and 62,273 tons treated in the cyanide works, realising a total value of £78,443. In May of this year the power generating plant broke down and it was found that the locomobiles were beyond repair. In addition to this the consulting engineer estimated that the working costs had risen 5s. per ton and the board decided to close down the mine for the present. The directors have since resolved to sell a portion of the plant, as they are advised it will not be possible to work the mine in the future on the same scale as heretofore. Ore reserves were estimated by the manager at: Eileen Alannah section, 77,200 tons at 10.62 dwts.; Eggplantine, 20,000 tons at 10 dwts.; Blue Duck, 15,000 tons at 10.23 dwts.; total, 112,200 tons. Accumulated tailings, 6,176 tons at 3.76 dwts.; and surface dump, 6,490 tons at 7 dwts. Consulting engineer reports that no development of great importance was undertaken in view of most discouraging results, and that ore reserves, as given in the manager's report, now need modifications.

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WESTERN OFFICE AND WAREHOUSE:
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The report just issued by the Tanganyika Concessions may be regarded as representing the turning point in the company's career. The statement to 31st December last shows a credit balance of £188,300 in place of the debit of £143,300 recorded for 1916. The transformation has been effected by taking credit for £352,800 on account of the profits of the Union Minière du Haut Katanga, which company, although possessing large accumulated profits, is unable to declare a dividend until a meeting can be held in Brussels. So far as the mining operations are concerned the company has been subject to many disappointments. The smelting plant of the Union Minière, whose output capacity is 40,000 tons per annum, was completed early in 1918, but owing to the failure of fuel supplies it has not been possible to run more than four furnaces during the greater part of the current year, and thus the total output is not expected to exceed about 22,000 tons instead of the 36,000 or 37,000 which would have been obtainable under normal conditions. This, of course, did not affect the revenue of the past accounting period, for which the output totals 27,500 tons as against 22,100 in 1916 and less than 1,000 tons in 1911. It is interesting to note that operations have been started upon part of the tin concession of the Union Minière, and that the first consignments of the metal are expected early next year. Satisfactory progress continues to be scored by the Benguela Railway, of whose share capital the Tanganyika holds 90 per cent. The steady advance in earnings is due to local traffic, but when the line can be completed to Katanga the receipts will be on a greatly increased scale. The company is rapidly reducing its indebtedness to the Zambesia. Last year the Rhodesia-Katanga Railway—which is leased to the Mashonaland—showed £51,200 balance of receipts over expenditure, and for the first seven months of the current period the surplus approximated to £32,300. As to the Zambesia Exploring, this company is also able to show a substantial credit instead of an insignificant one—thanks to the receipt of £39,600 in respect of Union Minière profits.

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THE WEEK IN THE SHAREMARKET.

Government Areas and New Modders Only Features.

BUSINESS was again quiet at Saturday's call. Springs and Van Ryn Deeps were easier, also Modder East Options, the parent stock remaining unchanged. On the other hand, Geduld Props and Government Areas hardened. During the course of the morning these improved still further, as also Springs West with sales at 23s. 6d. and 23s. 4½d. Things were again dull on Monday morning, with nothing worth noting. Sub Nigels partly-paid are now quoted 5s. higher owing to the calling up of the second instalment. During the day Government Areas advanced steadily, closing at 92s. 6d.—92s. 9d. On Wednesday morning Government made another small advance. Prices on the whole were steady, with an inclination upward, with the exception of Modder East and their Options. After the call Hume Pipes were sold at 29s. Another quiet call on Wednesday with Van Ryn Deeps and New Modders somewhat better. Modder Bs. have been passed over without quotation for the last two days. On Thursday morning New Modders advanced to £26, with a sale at that figure ex London. Springs and Gedulds were harder. Government Areas the turn lower. Otherwise no change. Tin goods seem in a hopeless state. Why, it is difficult to understand. Outside dealings for the week were limited to sales of Phoenix at 11d. and 1s. and Sakalavas 5s. Henderson's Estates were 4s. 6d.—5s., and Monteleos 25s. sellers.

After the call on Thursday, there was an active market in Geduld Props, until the price reached 40s. sales and buyers and commencing sales of the options at 9s. advancing to 10s. These options extend over three years with the right of taking up the present stock at 40s. At the opening on Friday the same stocks were again in demand, with sales at 41s. and 11s. respectively. The following alterations in prices took place at the call:—Sales: Mines Selections, 25s.; East Rand Coal, 2s. 4d.; Frank Smiths, 3s. 6d.; Geduld Props, 40s. 9d. and 40s. 6d.; Knight Centrals, 6s. 1d.; Leeuwpoots 21s. 6d.; Modder Bs., £7 9s. 6d.; Modder Deeps, £7 5s.; New State Areas, 21s. 3d.; Pretoria Cements, 68s. and 67s. 6d.; Ryan Nigels, 3s. 3d.; Southern Van Ryns, 12s. 9d.; Sub Nigels (10s. paid), 16s. 1½d.; West Springs, 23s. 6d.; Wolluters, 3s. 1d.; Modder East three-year Options, 4s. 9d. Buyers and sellers: Consolidated Investments, 22s. 6d. buyer; Glynn's Lydenburgs, 26s., 26s. 9d.; Hume Pipes, 29s., 30s.; Government Areas, 92s. 6d.—92s. 9d.; Lace Props, 11s., 11s. 6d.; Modder Easts, 18s. 4d., 18s. 6d.; New Modders, £26, £26 5s.; New Boksburgs, 1s. 3d.—1s. 5d.; Kleinfonteins, 10s. 3d., buyer; Alkalis, 36s.—38s. 6d.; Zaaipplaats, 14s. 10d.—15s.

	Fri., 3rd.	Sat., 4th.	Mon., 5th.	Tues., 6th.	Wed., 7th.	Thurs., 8th.	Thurs., 9th.
African Farms . . .	15 6*	15 8†	15 3*	15 3	15 3*	15 0*	
Anglo-Amer. Corp. . .	—	32 6†	32 6†	32 6†	32 6†	32 6†	
Apex Mines	—	7 0*	—	7 3†	6 6*	6 9*	
Bantjes Cons.	2 3	2 2*	2 3	2 2*	2 3*	2 2*	
Brakpan Mines	66 0*	66 0*	66 0*	66 0*	66 0*	66 0*	
Breyten Collieries . .	11 6*	11 6*	11 6*	11 9*	—	11 6*	
Brick & Potteries . . .	3 6*	3 6*	—	—	3 6*	3 6*	
British S. Africa . . .	21 0*	21 0*	21 3*	—	21 0*	22 0*	
Bushveld Tins	0 8*	0 8*	0 8*	0 8*	0 8*	0 8*	
Cassel Coals	—	—	38 6†	38 6†	38 6†	38 6†	
Cinderella Cons. . . .	—	—	—	—	—	5 0	
City & Suburbans . . .	7 6*	7 6*	7 6*	7 6*	7 9†	7 6*	
City Deeps	44 0*	45 0*	45 6*	46 0*	46 0*	46 0*	
Con. Investments	21 0*	22 0*	22 0*	21 6*	22 0*	22 0*	
Con. Langlaagtes	—	18 0†	—	—	—	—	
Con. Main Reefs	11 0*	11 0*	11 3*	11 6*	11 3*	11 3*	
Con. Mines Selection . .	24 6*	24 0*	24 6*	24 6*	24 6*	24 6*	
Coronation Collieries . .	—	17 6*	—	17 6*	—	—	
Coronation Freeholds . .	1 2	1 1*	1 0*	1 1*	1 1*	1 1	
Coronation Synd.	—	2 0†	2 0†	—	—	2 0†	
Crown Mines Deb. . . .	—	£100*	—	—	—	£100*	
Daggafontein Mines . .	23 0*	23 0*	23 0*	23 3	—	23 3	
Do. Options	5 9	6 0†	5 6*	5 6*	—	5 3	
Durban Road. Deeps . .	—	—	—	—	—	7 0*	
East Rand Coals	2 3*	2 6†	—	2 3*	2 3*	2 3*	
East Rand Deeps	6 11*	0 11*	1 0*	—	—	—	
E.R. Minings	—	—	19 0†	—	19 0†	19 0†	

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 3rd.	Sat., 4th.	Mon., 5th.	Tues., 6th.	Wed., 7th.	Thurs., 8th.	Thurs., 9th.
East Rand Props. . . .	5 3*	5 3*	5 3*	5 3*	—	—	6 0
East Rand Deb.	£66*	—	£66*	£66*	£66*	£66*	£66*
Eastern Golds	1 4*	1 5*	1 5*	1 5*	1 4*	1 4*	1 6
F. Smith Diamonds . . .	3 6†	3 0*	3 6†	3 0*	3 1*	—	—
Geduld Props.	37 6*	38 3	38 0	37 6*	38 0*	38 9*	—
Glencairns	1 3*	—	—	1 6*	—	—	—
Glencoe Collieries . . .	6 0*	6 0*	—	6 0*	—	—	—
Glynn's Lydenburgs . . .	25 0*	25 0*	25 0*	25 0*	25 0*	25 0*	25 0*
Government Areas . . .	89 0*	90 3*	91 6	93 0	92 9	93 0*	93 0*
Jhb. Bd. of Executors . .	—	—	—	—	—	—	28 0*
Jupiters	4 6*	4 6*	4 6*	5 0†	5 0†	—	—
Klerksdorp Props. . . .	3 0*	—	—	—	3 0*	—	—
Knight Centrals	5 9*	5 7*	5 11	6 3	6 3	6 0*	—
Lace Props.	10 3*	10 6*	10 0*	11 1½	11 6*	11 4*	—
Leeuwpoot Tins	26 6	26 6†	24 6	—	24 3*	24 0	—
Lydenburg Farms	8 8*	9 0†	8 9	8 10	9 0	8 11*	—
Meyer & Charltons . . .	—	83 0*	83 0*	83 0*	83 0*	83 0*	83 0*
Middelvie Est.	—	—	—	1 3†	0 10*	—	—
Modder B's	150 0†	—	147 0*	—	—	—	—
Modder Deep	143 9*	141 0*	144 0*	143 0*	144 0	143 6*	—
Modder Easts	18 9*	19 0*	18 3*	18 0*	18 0*	18 3*	—
Do. Options (3 yrs.) . . .	4 7*	4 4*	4 6	4 3*	4 5*	4 7*	—
Do. Options (4 yrs.) . . .	5 9*	5 7*	5 9*	5 8*	5 10*	5 10*	—
Hume Pipes	28 0*	28 3*	28 0*	28 0*	29 0	28 6*	—
Natal Navigation	20 0*	—	—	21 0*	—	21 0*	—
National Banks	£14½*	£14½*	£14½*	£14½*	£14½*	£14½*	£14½*
New Boksburgs	1 0*	1 0*	1 0*	1 0*	1 0*	1 1*	—
New Eland Diam.	23 9*	23 0*	23 6	25 0†	23 0*	—	—
New Era Cons.	9 6*	9 9*	9 9*	9 9*	9 9*	9 9*	—
New Geduld Deeps	5 8*	5 8*	—	5 9*	5 9*	5 9*	—
New Heriots	—	12 6*	—	12 6*	13 0	13 0*	—
New Kleinfonteins	10 3*	10 6*	10 9*	10 6*	10 6	10 0*	—
New Modder	£25½*	£25 8 9	£25½*	£25 7 4	£25½*	£25½*	£25½*
Nigels	6 0*	6 0†	4 6*	—	4 6*	4 0*	—
Nourse Mines	—	17 0†	17 0†	17 0†	17 0†	17 0†	—
Premier Preferreds	—	—	—	140 0*	—	145 0*	—
Pretoria Cements	58 0*	58 0	58 0*	—	58 0	58 0	—
Princess Estates	2 7*	2 9	2 9*	2 9*	2 7*	2 9*	—
Rand Collieries	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*	—
Rand Nucleus	2 0†	2 0†	1 9*	2 0†	1 11†	1 6*	—
Rand Select. Corp.	78 6*	—	81 3*	81 9*	81 6*	—	—
Randfontein Deeps	5 0*	5 0*	—	5 0*	5 0*	5 0*	—
Randfontein Est.	13 6*	13 6*	13 6*	15 6*	13 6*	—	—
Rooibergs	7 0*	7 3	7 0*	7 3†	6 0*	6 3*	—
Roodepoort Uniteds	—	3 0†	—	—	2 3*	—	—
Ryan Nigels	—	3 0*	3 3†	—	3 0*	—	—
Shebas	—	1 0*	—	1 0*	1 6*	1 6*	—
Simmer & Jacks	—	—	6 0†	5 9†	—	—	—
Simmer Deeps	2 6†	2 0*	2 0*	2 0*	2 0*	2 0*	—
S.A. Breweries	—	—	—	—	—	31 6*	—
S.A. Lands	6 0*	6 0*	6 1	6 2*	6 3	6 0	—
Springs Mines	66 3	65 3	65 0	65 0*	65 0	65 0	—
Sub Nigels	26 6	26 6*	26 6*	27 0*	27 3	27 6	—
Transvaal Lands	23 6*	24 0*	25 0*	25 0*	25 0*	25 0*	—
Trans. G.M. Est.	12 6*	12 6*	12 6*	13 3*	—	13 3*	—
Van Ryn Deeps	66 3	66 0	67 0*	66 6	67 0	67 0*	—
Village Deeps	—	—	—	16 0*	16 0*	16 0*	—
Western Rand Est.	—	2 3*	2 3*	—	2 3*	2 3*	—
Witbank Collieries	—	—	55 0*	—	55 0*	—	—
Witwatersrand Deeps . . .	13 6*	13 6*	13 6*	13 6*	13 6*	13 9†	—
Wit. Townships	—	—	27 6	27 6	27 6	27 6*	—
Wolluters	3 3	3 1*	3 0*	3 0*	3 0*	3 3†	—
Zaaipplaats Tins	15 6	15 0*	14 6*	14 6*	14 0*	14 6*	—
Union 5 per cent.	£102½	£102½*	£102 7 6	£103	£102½*	£103	—
New States	20 0	20 0	20 1½	20 0*	20 3	20 6	—
S. Van Ryn	12 9*	12 9*	12 9*	12 9	12 9*	12 6*	—
S.A. Alkali	39 6*	38 0*	42 6†	38 6*	39 0*	38 0*	—
West Springs	23 0*	23 3	23 3*	23 3	23 3	23 3	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.

MINING INSTITUTE.

Government Certificates for Mine Managers and Overseers.

Nearly 80% of the Managers Certificates issued by examination in South Africa last year were secured by the Institute.

—Vide list in G.M.E.'s recent Annual Report.

Practically all the Overseers passed. Several hundred successes.

Classes may be joined at any time.

Address: Professor JOHN YATES, St. James' Mansions, Eloff St.

Latest Company Registrations.

The list of new companies registered in October, 1918, is as follows:—

- 5739. Lion Cardboard Box Company, Ltd., 37a, West Street, Johannesburg; capital, £1,000. Private company.
- 5740. Orient Gold Mining Co., Ltd., 23, Moseley Buildings, President Street, Johannesburg; capital, £6,000.
- 5741. Gaba, Limited, 26, Market Street, Johannesburg; capital, £600. Private company.
- 5742. Harwin & Paterson, Ltd., 55, Harrison Street, Johannesburg; capital, £30,000. Private company.
- 5743. Sali Mahomed Ayob, Ltd., 86, Prinsloo Street, Pretoria; capital, £1,000. Private company.
- 5744. Dadamia, Ltd., 24, Pollak Avenue, New Clare, Johannesburg; capital, £500. Private company.
- 5745. The Fencing Poles and Firewood Supply Co., Ltd., 96, Harrison Street, Johannesburg; capital, £1,000. Private company.
- 5746. Toilet Manufacturing Co., Ltd., 155, Meyer Street, Germiston; capital, £2,000. Private company.
- 5747. M. E. Asvat Properties, Ltd., Kimberley Street, Klerk-dorp; capital, £1,000. Private company.
- 5748. J. J. Simpson, Ltd., 100a, Market Street, Johannesburg; capital, £5,000. Private company.
- 5749. African Motor Accessories Co., Ltd., 17a, Loveday Street, Johannesburg; capital, £1,000. Private company.
- 5750. Asbestocement Manufacturing Co., Ltd., 131-133, President Street, Johannesburg; capital, £14,000. Private company.
- 5751. M. Kessel & Co., Ltd., 99, Church Street West, Pretoria; capital, £20,000. Private company.
- 5752. United Commercial Agencies, Ltd., 96, President Street, Johannesburg; capital, £10,005. Private company.
- 5753. Consolidated Agencies, Ltd., 287, St. Andries Street, Pretoria; capital, £500. Private company.
- 5754. Light's Saw Mills, Ltd., 10 and 11, London House, Loveday Street, Johannesburg; capital, £500. Private company.
- 5755. Kathor Estate, Ltd., 31, Market Street, Johannesburg; capital, £400. Private company.
- 5756. Unity Club of South Africa, Ltd., Central House, Simmonds Street, Johannesburg; capital, £60. Private company.
- 5757. The General Advertising Agency, Ltd., 10-15, Provident Building, Fox Street, Johannesburg; capital, £2,000. Private company.
- 5758. D. I. Fram & Co., Ltd., 58, Market Street, Johannesburg; capital, £20,000. Private company.
- 5759. The Rand United Boot Manufacturers, Ltd., 201, Commissioner Street, Johannesburg; capital, £2,200. Private company.
- 5760. Bailem, Ltd., 1, Burchmore's Buildings, Fox Street, Johannesburg; capital, £100. Private company.
- 5761. Murite Paint and Chemical Company, Ltd., 20, Corporation Buildings, Commissioner Street, Johannesburg; capital, £5,500. Private company.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

- 5305. The Pretoria Iron Mines, Ltd., Pretoria. Increase of capital.
 - 3657. Mann, George & Co. (Delagoa), Ltd., Johannesburg. Increase of capital.
 - 5573. South African Horseshoe Manufacturing Co., Ltd., Pretoria. Increase of capital.
 - 4261. Asnana & Co., Ltd., Johannesburg. Destruction of books.
 - 5331. Freedmans Meat Supply Co., Ltd., Johannesburg. Destruction of books.
 - 4905. Industries, Ltd., Johannesburg. Liquidation.
 - 4264. South African Produce Co., Ltd., Pretoria. Liquidation.
 - 2759. Adair-Usher Process, Ltd., Johannesburg. Liquidation.
 - 4519. Transvaal Trading Agency, Ltd., Johannesburg. Liquidation.
 - 4903. W. R. Levin & Co., Ltd., Johannesburg. Increase of capital.
 - 5603. Globe Garage and Engineering Co., Ltd., Johannesburg. Alteration of articles.
 - 2572. Carolina Asbestos Co., Ltd., Johannesburg. Liquidation.
- ### NOTICES OF INCREASE OF CAPITAL.
- 5305. The Pretoria Iron Mines, Ltd., Pretoria. £35,000 to £50,000.
 - 9856. Northern Time Co., Ltd., Johannesburg. £3,000 to £3,500.
 - 5301. White Leads (S.A.), Ltd., Johannesburg. £5,000 to £6,500.
 - 5573. South African Horseshoe Manufacturing Co., Ltd., Pretoria. £1,800 to £4,000.
 - 4903. W. R. Levin & Co., Ltd., Johannesburg. £2,000 to £50,000.
- ### NOTICES OF LIQUIDATION.
- 4264. South African Produce Co., Ltd., Pretoria; capital, £750. Voluntary.
 - 4905. Industries, Ltd., Johannesburg; capital, £1,000. Voluntary.
 - 2759. Adair-Usher Process, Ltd., Johannesburg; capital, £1,000. Voluntary.
 - 4519. Transvaal Trading Agency, Ltd., Johannesburg; capital, £100. Voluntary.
 - 4505. Economic Sick Benefit Association, Ltd., Johannesburg; capital, £5,000. Order of Court.
 - 2572. Carolina Asbestos Co., Ltd., Johannesburg; capital, £52,000. Voluntary.

New Patents.

- 718. The American Machine and Foundry Company.—An improved automatic-hand cigarette machine feed.
- 718. Dirk Lodewijk Kohlman.—Collapsible baby and wheeling chairs and carriages.
- 720. Harold Platt.—An improved method of fitting branch connections to pipes.
- 721. Labouchere and Company.—An improved process for the separation of diamonds from diamondiferous matter.
- 722. Henry Samuel Potter, Oliver Trevillion Jenkins.—Improvements in drills, bits, or steels for use with hammer drills and the like.
- 723. Louis Robert Vierdag.—A chemical fertiliser.
- 724. Arthur George Dampier-Bennett.—Improvements in automatic air admission valves for internal combustion engines.
- 725. William Edwin Nettle, Paul Selby, James Blythe, and Joseph Henry Holman.—Improvements in conveying liquid to rock drilling tools.
- 726. Margaretha Lesser.—An improved concentrator.
- 727. John Henry Moise.—The S.S. (Safe and Sure) Indigestion Cure.
- 728. George Patrick Milne.—Improved fitting for bedsteads and the like.
- 729. Margaretha Lesser.—An improved eccentric.
- 730. The Home Pipe Company (South Africa), Ltd.—Improvements in machines for manufacturing wire reinforcements for concrete pipes.
- 731. Frederick Claud Stirrock, Herbert Freeland, and George Vickery.—Improvements in "water blasts" and the like devices.

Rhodesia Broken Hill Mine. Borehole Results.

The Rhodesia Broken Hill Development Co. states, in regard to the Rhodesia Broken Hill Mine that the following further results were received by cable on December 2nd, relating to the continuation of the two boreholes as to which an announcement was made on September 11th last:—North hole: From 46 ft. to 62 ft., in rich lead ore, as already reported; 61 ft. to 116 ft., carbonate of lead sludges, assaying 55.4 p.c. lead, 1.2 p.c. zinc. Hole stopped in good ore, owing to influenza. West hole: From 62 ft. to 91 ft., in rich lead ore, as already reported; 91 ft. to 138 ft., mixed oxidised ores, averaging 26.8 p.c. lead, 25.6 p.c. zinc; 138 ft. to 161 ft., sulphide ore, averaging 43 p.c. lead, 23 p.c. zinc; 161 ft. to 198 ft., mixed oxidised ores, averaging 20.6 p.c. lead, 24 p.c. zinc; 198 ft. to 264 ft., sulphide ore, averaging 42 p.c. lead, 24.5 p.c. zinc; 264 ft. to 276 ft., sulphides with some silicate zinc, averaging 25.7 p.c. lead, 32.5 p.c. zinc; 276 ft. to 286 ft., hematite with silicate of zinc, averaging 10.6 p.c. lead, 20.5 p.c. zinc; 286 ft. to 315 ft., silicate of zinc with carbonate of lead and galena, averaging 21.4 p.c. lead, 39 p.c. zinc; 315 ft. to 385 ft., silicate of zinc, averaging 4.4 p.c. lead, 45 p.c. zinc; 385 ft. to 403 ft., sulphides with some oxidised ore, averaging 28 p.c. lead, 31.8 p.c. zinc; 403 ft. to 415 ft., silicate of zinc, averaging 8 p.c. lead, 38 p.c. zinc. Hole stopped in good zinc ore owing to influenza.

Balkis South African Interests.

The report of Balkis, Ltd., for the year ended 31st August last states that income arising from rents, dividends, interest, transfer fees, etc., amounted to £1,635, and, after allowing for £1,263 brought forward, profit and loss shows a credit of £1,391. Property account stands at £74,186, an increase of £215, represented by expenditure on capital account incurred. The land holdings comprised under this heading remain as previously reported, and aggregate approximately 285,000 acres in the Transvaal, an undivided moiety of about 43,000 acres in Rhodesia, known as the "Kanya Block," and mining concessions in the Bangwaketse Reserve of the Bechuanaland Protectorate, giving rights of selection for mineral exploitation over an area of about 9,000 square miles of territory. No developments of interest have occurred in connection with these concessions. Sundry investments stand at £32,503, against £32,029. As usual, these are taken at or under cost. During the year and subsequently some of the securities were sold at prices considerably in excess of the book figures. Inquiries for land have evinced a distinctly broadening tendency, and the company has been successful in negotiating the sale of 41,557 morgen of land for approximately £22,300. The deeds of sale have not yet been completed. The sale referred to in last year's report has been duly completed, but the accounts in connection with the transaction have only just been received. Inquiries have recently been made regarding other blocks of land, and an offer of purchase in one case has been submitted from South Africa, although at a price below the figure which, in the opinion of the directors, should be accepted. The discovery of deposits of corundum on one of the farms was reported, and arrangements made with a tributor resulted in the receipt of £51 in royalties. The same tributor is also engaged in opening up a deposit of mica on another farm.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

News Expected re Low-Grade Mines—Steamers and Sailers Coming—The Speculative Element—Watching and Waiting Policy—Galvanised Iron Down—Lamps Cheaper.

BUSINESS is still quiet, but there are a few more enquiries on the Commercial Exchange. Although things are quiet there is a fairly cheerful tone in trade circles, presumably based on rumours or rather statements from responsible mining people that good news is shortly expected in reference to the British Government doing something to assist the low-grade mines. It is palpable from the gold output returns for December showing the large number of mines suffering losses that we are reaching an acute stage when something has to be done or several mines must close down. The chief buying office is doing very little preparatory to closing down at the end of January, when a little freer market is expected. However, what is keeping business at a standstill is the fact that eight steamers are on their way from America, chiefly with mining material, ordered some long time ago. In addition to these steamers there are sailing vessels from New York and Canada in plenty also on the way here. In addition there are several large Union Castle boats en route with general cargoes for South Africa. An American import house here has not sent any orders to America for the past three months, their principal object being to cancel or modify orders already paid for or under bankers' guarantee, but without any great success. The practical stoppage of big business since the armistice is unchanged, but confidence is restored somewhat, chiefly because of the values keeping up in Britain and America. However, merchants will not buy anything of importance until they obtain some idea as to the quantities of belated material to arrive from America and Britain. Then again the outside speculators are still in the market, but as they cut most of their losses at from five to ten per cent. in November and December they are not the disturbing element they were, and their importance to-day should not be too much exaggerated. The other side of the subject, however, is that one great reason for the absence of dealings in anything like parcels is the putting out of action of the speculating element. And further, merchants are decidedly holding their hands. Yet another reason is the watching and waiting for military sales. For example, a semi-public institution sent two representatives to Pretoria on Monday last to attend the Roberts Heights public auction, and although they did nothing, because of the poorness of the materials offered for sale, so far as their instructions are concerned, yet the fact remains that every consumer seems to be adopting the policy of watching and waiting for something to turn up in the way of bargains.

TIMBER AND BUILDING MATERIALS.

The free dealing in timber in Britain seems to be the only reason for the price of deals decreasing in Johannesburg, as they are now 1s. 9d. per foot for short lengths and 1s. 10d. for the longer ones. Ceilings and floorings are also down a farthing per foot. Importers seem reticent about the Baltic news, but from hints gathered here and there, the tendency is easier both for freight and timber. By the way, a returned soldier conversant with the timber trade states that he saw a hundred miles of railway in France with improvised villages all along the route, behind the lines. It struck him that when the troops are demobilised and after peace is signed that the quantity of timber in these temporary structures will go a very long way to build up the French devastated districts; at all events to make a wonderfully good commencement. Pitch pine is down 6d. per cube, making it the same as Oregon. The price of deals for forward delivery is 1s. 8d. per foot. Galvanised roofing iron is 1s. 7d. and 1s. 8d. per foot for short lengths. A broker was asked what it could be bought for three months ahead. He replied that no one would give even 1s. 6d. per foot, as the market was nervous in consequence of the unknown quantities coming from

America and Britain, therefore the quotation for three months ahead was an unknown quantity. Business is languishing, as tenders are being held back for private work to a very great extent, chiefly for lower prices and also the uncertainty about the builders' demands for a forty-four hours' week at the present rate of pay. For second-hand material, stocks are ample, with a tendency to lower prices, as the farmers are not coming into town at all freely in consequence of the 'flu. Roofing iron is ruling at about 1s. and deals 1s. to 1s. 3d. per foot. The poorer qualities are at negotiated values at the proverbial any-price quotation.

ELECTRICAL GOODS.

Lamps, high voltage, British, Holland and American, are 24s. to 27s. wholesale, and 3s. to 3s. 3d. retail; key-holders, 3s. 9d. to 4s.; lampholders, cord grips, 14s. to 15s.; switches, Japanese 24s. to 27s., English 30s. to 35s. Other prices for electrical goods remain unaltered. Materials are coming in very fairly, which accounts in one way for some prices coming down. Buyers are holding back in the expectation of prices going down further, but this, in the opinion of an expert, is a mistaken idea, as it will, in his view, take a long time, probably six to eight months, before a big decrease in prices can take place, and even then pre-war levels will not be reached. At another store it was noticed that a further "cut" has been made in lamps at 2s. 9d. each.

MOTOR CARS AND TYRES.

Business in the motor world is almost at a standstill owing to the absence of fresh stocks coming forward. One of the largest importers stated that they had recently dismissed four of their travellers in consequence of the impossibility of doing business under the present conditions, and were sending one of their representatives home shortly to accelerate the dispatch of cars and materials. Although the complaint is universal among importers of the present dearth of business in consequence of non-existent stocks, high hopes are held as to future expansion as soon as shipping facilities shall be restored to a more normal condition.

IRON, STEEL AND PIPES.

Dunswart local iron has been reduced from 45s. to 40s. per 100 lbs., therefore it is taken for granted that our South African makers are alive to the fact that competition is coming from Britain and America. It is a pity that the S.A. pig iron has not yet become the commercial factor that was fondly anticipated a short time ago, as it would very materially assist the Dunswart people to put more backbone into their manufactures. However, no doubt a little more patience will enable the Pretoria Iron Company to accomplish much and so stop much of the imported pig iron coming into this country. It is said that another and larger furnace and other works are in course of construction at the Pretoria works. Unless one is in touch with the iron trade, it is hard adequately to realise the amount of interest taken in the pig iron industry, as it means so much as a basis to all our hinterland industries. Steel plates from America are about 75s. per 100 lbs. for spot delivery and 70s. "to arrive" price. Flat galvanised iron has come down to 75s. per 100 lbs. as compared with well over 100s. a short time since. The imported round iron and steel in the smaller sizes have declined from 92s. 6d. to 82s. 6d. per 100 lbs. There have been decreases in the price of piping, notably on account of the speculative element, who are said to have been rather badly bitten. Of course, at one period the temptation was very great to cut into this trade, particularly in the second-hand kind. To-day new one-inch pipes have been delivered to the mines at 7½d.

per foot, as compared with 1s. four months ago. Two-inch at 1s. 7½d. instead of 2s. 2½d. Three and four-inch pipes have been coming in from America in such large quantities that they have suffered more than the one and two-inch kinds. It appears that the speculators have been more or less caught in the juggling of quotations, as they never reckoned on the freight and other charges being so much, say, from America or Canada. The values of second-hand pipes at the weekly auction sales have declined from, say, 1s. 9d. to the odd ninepence and even less per foot, as compared with pre-armistice days.

OILS, COLOURS, WHITE LEAD, ETC.

According to a trade list for 1919, it appears that Beaver board will arrive in two weeks, but orders can now be booked at 7d. per square foot, with packing extra. Special coach varnish, 21s.; black Japan, 21s.; church pew, 27s. 6d.; Terebinte, knotting, etc., 25s.; ceiling varnish, 15s., all for five-sixth Imperial gallon. Raw linseed oil, 13s. O.M.; do., 60s. for 4 imperials. White lead, 11d. lb. in 100 lb. kegs; Pacific, 1s. lb., 112 lbs.; smaller sizes, 1s. 3d. lb. Muralo, 36s. case 8 7 lb. pkts. Glues, 1s. 4d. to 2s. 9d. lb. Glasspaper, 56s. ream (480 sheets). Plaster of Paris, second quality, 40s. per 187 lbs. Cement, 10s. 6d. bag. White lime, 8s. 6d. bag. Whiting, 25s. per 100 lbs. Paints in oils: Canadian, black and green, 10½d. lb.; Venetian red, 10½d.; golden ochre, 10½d.; patent driers, 10½d.; burnt umber, 10½d.; burnt sienna, 10½d. lb., all in 112 lb. kegs; smaller sizes, 1s. 3d. lb. Coal tar, 16s. per 4 imperial gallons; 4s. 6d. per gall. Market cable reports all English markets are advancing; no possibility of prices falling. The wholesale price of white lead (genuine) is 90s. to 100s. The latest information is that it has advanced £7 10s. in Britain. Turps are 80s. 2-4's, and 90s. 10-1's. Grease, imported, £42 per ton; this is an increase, as there were no new shipments of late. Local grease, £33 to £33½ per ton; raw material scarcer. Paraffin easier at 22s. 6d. case, as compared with Government regulation price of 24s. Motor petrol, 38s. 6d. case. Business is quite good for the jobbing painters, therefore the demand for paint and brushes is good. One manager remarked, "The whole world has to be painted, therefore our prospects are good." The roofs of Johannesburg, it is true, will require a lot of painting.

United Rhodesia Gold Fields.

The report for year to July 31 last states that of the company's holdings of shares and debentures, which stand in the balance-sheet at their book cost, £188,798, about 73 p.c. were quoted at July 31 last, and on this proportion there was a depreciation of about £80,700. The greater part of this loss is due to the low market price at which the Mayo (Rhodesia) Development Co. (1908), Ltd., shares are quoted. The directors consider that the assets of that company justify a considerably higher value. Properties Leased on Tribute.—Results of year to July 31: Cambrian, 7,709 tons crushed, 1,039'60 ozs. fine gold; value £16,883; royalty to company, £814, S. D. C., 3,416 tons crushed, 115'19 ozs. fine gold; value, £483; royalty, £36. Lion, 312 tons crushed, 92'83 ozs. fine gold; value, £385; royalty, £19. Untali C., 327 tons crushed, 31'45 ozs. fine gold; value, £145; royalty to company, £11; total royalty, £910. Junabo Gold.—The tributaries have crushed continuously throughout the year, and the following are the results: Tons treated, 6,540; fine gold won, 2,011'13; value, £8,508; royalty paid to company, £1,227. Just-in-Time Gold.—Crushing has been continuous on Block No. 854 throughout the year, with the following results: Tons treated, 3,109; fine gold won, 731'87; value of gold, £3,488; royalty, £174. Mayo (Rhodesia).—Results of the tributaries operations: Tons treated, 10,069; fine gold won, 5,852'08; value of gold, £24,338; royalty, £2,182. Work was again very restricted on the Borrowdale estate on account of only mules being used for the work there. In addition, the crops suffered somewhat from lack of rain at the most important growing period. The value of the crops was therefore only £1,449,

showing a loss of £496. Cattle amounted to 2,717 head, estimated value £18,002. Land sales 8,079 acres, for £9,469. The accounts show a loss for the year of £10,544, increasing the debit balance brought forward to £76,637.

Harmony Proprietary.

The report to September 30 last states that the completion and opening of the railway during the war, together with the cessation of hostilities, gives, after many years of weary waiting, the necessary facilities for economically developing the enormous mineral and agricultural features of the company's 320 square miles of freehold territory, and also enables the realisation of its immense quantity of valuable timber, all of which assets are fully dealt with in the synopsis and recent circular dated July and November 5 respectively. Important progress made since these dates will be placed before the shareholders at the meeting. As regards working capital, that will be provided by the realisation of the very valuable timber and by leasing the various mineral, agricultural, and pastoral propositions, this company, as owner of the estate, receiving rents, royalties, and a share of the profits from the subsidiary companies now being organised in influential people who will find all the respective working capitals, and also from all other companies that will be formed from time to time. The accounts show a loss for year of £3,195., increasing the debit brought forward to £92,962.

Fraser & Chalmers.

What will probably prove to be the last report, in the ordinary sense of the word, of Fraser & Chalmers, Ltd., in England, the well-known manufacturers of mining machinery, has just been issued. With the sale of the manufacturing business at Erith to the General Electric Company and the disposal of the African branches there is nothing left to do but to wind up the concern, and the main interest centres upon the question of how much the shareholders will receive in the end. The profits for the year ended 30th of June last amounted to £33,300, and this is just sufficient to provide for the Preference interest and a dividend of 7½ per cent. on the Ordinary shares, leaving the balance of £16,800 brought into the accounts still intact. No profit and loss account is furnished, but the balance-sheet shows an apparent surplus of assets over liabilities, including the share capital, of £211,600, and this justifies the present price of the Ordinary shares at between 30s. and 31s. Negotiations, however, are still proceeding with regard to the sale of the assets of the remaining branches of the company in Canada, Australia and Singapore so that the exact amount which will finally be distributable is still uncertain. At the forthcoming meeting the views of the shareholders will be taken as to liquidation.

An Important Engineering Contract.

Messrs. Dick, Kerr & Co., Ltd., have recently received an order for two 5,000 k.w. turbo-alternator sets and condensing plants for the Union Minière du Haut Katanga, which is one of the largest copper producers in the world, outside the U.S.A., having extensive mining properties in the Belgian Congo. The turbines will be of the Willans-Zoelly type operating on steam at 145 lbs. per sq. in. pressure and exhausting into a vacuum of 28 in. (Bar 30 in.) and will carry an overload of 6,250 k.w. for two hours. The condensing plants are each designed to deal with 66,000 lbs. of exhaust steam per hour and have 10,000 sq. ft. of cooling surface. The turbines will be coupled to Siemens alternators designed for a normal output of 5,000 k.w. at .9 power factor (5,560 k.v.a.) when supplying 3-phase current at 50 cycles and 6,600 volts pressure, and will be capable of carrying overloads of 25 per cent. for 2 hours or 50 per cent. momentarily. The ventilating air for these machines will be filtered in dry air filters of the Premier Cooler Co.'s make; the machines will each be fitted with a direct-coupled 110 volt exciter of the overhung type and will operate in conjunction with an automatic voltage regulator.

Company Meetings.

CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA.

PROVISION FOR DEPRECIATION AND CONTINGENCIES.

LORD HARRIS'S REVIEW.

The ordinary general meeting of the Consolidated Gold Fields of South Africa, Ltd., was held on December 5 at Cannon Street Hotel, E.C., Lord Harris (chairman of the company) presiding.

The Secretary (Mr. Herbert C. Porter) having read the notice conveying the meeting and the report of the auditors,

The Chairman said:—Shall we run through the accounts, commencing with profit and loss? Management expenses are £13,373 odd, as compared with £10,574 odd. The increase is due to war bonus granted to the staff in consideration of the increased cost of living. Since the accounts were made up we have had to take up that matter again and to give an increased bonus over what we were giving in the year under review. We have received from our employees an expression of their appreciation of our endeavours to meet them in the very difficult circumstances caused by the increased cost of living, and it may be of interest to you to hear that we have made an arrangement with them by which the bonus will fluctuate upwards and downwards as the cost of living increases or decreases, down to a fixed minimum which we have agreed with them fairly represented a standard wage previous to the war. Subscriptions and donations are £2,042, as compared with £1,639 odd, due chiefly to a subscription to the South African Hospitals and Comforts Fund. Debiture interest is reduced, as usual, by the drawings. Upon the other side, we get by dividends, profits by sales of investments, commission and sundry receipts, less amounts written off, £432,080 odd, as compared with £464,179 odd. A big reduction, due chiefly to the passing by Knights Deep, Ltd., of its dividend, a dividend on Robinson Deep of 2s. instead of 8s., and of 9d. instead of 1s. 6d. on Simmers, is largely counterbalanced by the receipt of our first dividend of 5 per cent.—namely, £49,000 odd on Gold Fields American shares and £23,000 odd on Gold Fields Rhodesian shares—and from dividends on Government Gold Mining Areas, Falcon Mines, New Modders and America Trona Preference. Profits from investments realised were £37,750 more than last year, so that the ultimate reduction in revenue is only some £32,000. Interest received is some £10,000 down, due chiefly to the lower rate of interest on Treasury bill, and bank deposits and the repayment of loans on which we were getting 7 per cent. and could only obtain 3½ per cent. on. The amounts written off under this item have nothing to do with the large sums written down for depreciation in another part of the accounts, but are chiefly recurring items for redemption of properties.

APPROPRIATIONS.

That gives us a balance to carry down of £412,539 odd; add to that the balance from the appropriation account of £58,405, and also the amount of £600,000 which, as we told you in the report, we have taken from the reserve, and we get £1,070,945. Out of that sum we make the following provisions:—For depreciation of investments, £705,807 odd—a subject which I will deal with at length later on—the First and Second Preference dividends, French Government duty and stamps, income tax, South African and, for the first time, American income tax, representing the Federal Government taxation on revenue

received by us in the States; and we carry to the balance-sheet £210,094 odd. Turning to the balance-sheet, the capital, authorised and issued, is unchanged. The reserve disappears, having been transferred to profit and loss account. As regards liabilities, the amount of the debenture liability has been reduced by the annual drawing. The Simmer and Jack East second debenture guarantee is £6,496, as compared with £8,352. Sundry creditors are £226,597 this year, as compared with £76,101 last year, the increase being at that date partly for amounts due for the purchase of the Johnson Matthey interest and for temporary finance, all since paid. Contingent liabilities are reduced by £80,306. The liability to Robinson Deep has become an actual loan, and there is a reduction in American Trona loan which we guaranteed. The other items are not of importance. On the other side we get by investments, shares in companies at or under cost, £3,175,671, as compared with £3,507,156, or a decrease of £331,464. The total value of purchases of investments in excess of sales was £374,000, the principal items of which were the new issue of the Sub Nigel shares, Trinidad Leaseholds, Johnson Matthey and Co., and Southern Van Ryn Reef. As £705,807 has been written off other investments for depreciation, a net decrease on investments of the amount I have stated is shown. British Government securities are this year £556,319 odd, as compared with £784,406 odd last year. In addition, you will find lower down investments in Treasury bills £297,867 odd. Loan at short call is this year only £11,000, as compared with £200,000, due to repayments from the market. Sundry debtors and dividends declared are £219,498, as compared with £173,754 odd, an increase of £45,743 odd. The debtors in London increased owing to amounts due from participants in respect of American Trona shares to be taken up for guarantee of loans since paid. The dividends accrued are less by £22,528, owing to reductions in receipts from South African companies. Cash advances and mortgages are £266,264, as compared with £352,956 odd, the reduction being due to acceptance of shares in American Trona for an advance; and a repayment by Gold Fields American. Treasury bills I have already referred to. Cash at bankers and in hand is £351,935, as compared with £226,557. The cash position, taking the usual items on each side this year, is £948,709 odd, as compared with £1,000,578 odd, the difference being due to purchases of investments.

THE USE OF RESERVE.

Before passing to general subjects I had better now deal with the policy which we have adopted of providing out of the reserve not only for the depreciation of the year, namely, £388,348 odd, almost entirely accounted for by the fall in the market price of our big South African mine, and then by the decision to make provision for further depreciation by utilising the balance of the reserve. That is a point upon which you may be disposed to argue or to criticise. I am sure, however, when you realise how serious have been the disadvantages we have had to face and are facing, and the inevitable effect on our receipts for the year 1918-19, you will accept our advice, appreciating that the unpleasant fact has got to be faced some time or other. Owing to the heavy extra cost of gold mining, heavy floods, interruptions to mining owing to influenza and earth troubles in the case of Robinson Deep, the fact is we are in face of a period of most serious disappointment. We could, of course, not have foreseen the effects of the war; we could not have foreseen the interruptions to mining caused by the epidemic; but we had some years ago fore-

seen that heavy depreciation had got to be provided for, and that the reserve fund which we set aside specially for that purpose would be heavily indented on. At the same time, having regard to the stable character of mining on the Rand, we were perfectly justified in looking forward to our holdings in the Knights Deep, Simmer and Jack, Robinson Deep, and other smaller interests being steady and regular dividend payers. It was on the basis of that security that some years ago I encouraged you to hope for regular dividends out of the receipts from our investments on the Rand, and at the same time I expressed the hope that there might be further profits from new business. At the same time, we quite appreciate the fact that these South African investments were wasting assets, and that we must look to other investments by degrees taking their place. We at the advice of our engineers made our effort on the Rand further east. It was a failure, and, naturally, that discouraged us from making more extensive operations in the Far East Rand. We have to some extent made up for that more recently by purchases after the success of some of these companies had been fully assured. Again, upon the advice of our engineers, we made various investments in the United States and formed our American Company, and up to 1914 our anticipations seemed to be thoroughly well justified that, long before our Rand investments began to fall off, our receipts from other sources would be bringing in a fair income.

WAR—AND AFTER.

Unfortunately, the war intervened and has spoilt our programme. Our income from our three big investments in South Africa has been reduced from £457,000 in 1911 to £248,000 last year and £72,000 this year, and the heavy depreciation has had to be met either out of income or from reserve. At the same moment, owing again to the war and to the difficulties under which the factories in America are labouring, and, within the last week or two, owing to the epidemic of influenza having attacked many industries in the United States, including some of ours, while our income from the Rand has fallen off, the income which we anticipated from the United States has not materialised at as early a date as we expected. We are passing through a lean period, which we must ask you courageously to bear with, but certainly not to be despondent over. Several things may happen, though I make no prophecy. The cost of gold mining may begin to come down. The British Government may consider that the exceptional position of gold production deserves some special help. The Government of the United States may be disposed, by remission of some taxation, to assist the production of potash, a chemical which is of such vital importance to agriculture. Any one of these possible contingencies would help to restore the balance and enable us to show you something more like normal profits without the fear of further depreciation. Meantime we are most anxious, if possible, to continue to distribute dividends, and we want to feel that we have dealt with the unfortunate position of our low-grade mines, if not on a drastic, at least on a conservative basis. A large portion of the profits of the year are being used to pay the dividends, and at the same time we ask you to support us in our policy, which we have adopted unhesitatingly, to use our reserve to meet the extremely abnormal situation.

INNER RESERVES.

We are following precedent. Our reserves have been utilised on previous occasions for similar purposes. Of course, a reserve gives a feeling of confidence, and

it will be our business to build one up again when things become normal, but a trust company dealing chiefly in mining shares cannot afford to keep hundreds of thousands of pounds locked up in gilt-edged securities when, owing to no fault of its own, it has difficulties to meet. This situation is partly caused by our conservative system of accounting. I have dealt with the matter, I think, at length on previous occasions, but perhaps I had better repeat that we never write up our investments to market price. Once written down there they stay, unless affected by further purchases, whatever the market price may be, and the consequence is that we have a very comfortable and substantial inner reserve in the shape of unrealised appreciation of considerably over £1,000,000. And with reference to that, I should point out that, in addition to this unrealised profit, we have a further deferred profit lying dormant in the Grootfontein transaction, referred to in our report. We have, as you are aware, sold an area equal to 500 claims to the Sub Nigel Company for 130,000 of its fully-paid shares, but as the completion of the sale depends upon the date at which we may elect to locate our mynpacht rights, transfer may not be given to us and the shares delivered to us before the end of 1920. As we have an 85 per cent. interest in the deal, and as the farm Grootfontein stands in our books at a moderate figure, it will be apparent to you that if the Sub Nigel continues on its prosperous career we stand to harvest a very handsome profit indeed in due course. We shall retain a mynpacht area equal to about 1,100 claims on this farm, the working or disposal of which still depend upon developments in that neighbourhood, which are being closely followed by our engineers. A casual but deferred profit to which I may also refer is a bewaarplaatsen award accruing to the Turfontein Estates, of which our share amounts to some £20,000, payable to us over a term of years. If our system of accountancy was difficult or altered to an annual valuation at market price that appreciation would appear in the accounts. We have discussed the policy of a change, but, owing to complicated transactions with the income tax authorities, extending over many years, we have decided that it is better to continue our present system of accountancy. I have made a full disclosure of our policy, which has only been adopted after the most careful consideration, and I ask you to continue your confidence in us that, in making provision beyond the necessities of the year under review, we have acted wisely.

GOLD AND MINING COSTS.

Turning to general subjects, Mr. Christopher's report and that of Mr. Lesbe contain a very full description of the adverse circumstances which have affected gold production in the Transvaal, and these circumstances are common to gold production throughout the world. I dare say you have noticed that there has been a combined movement in the United States of gold producers to impress upon the Government of the United States, just as the gold producers of the British Empire have endeavoured to impress upon the British Government, that, if the production of gold in its former volume is of vital importance for banking and currency purposes, and if ores which could be treated at the pre-war cost of production are to continue to be produced, then assistance in some form or other is necessary. What is happening in the case of practically all gold mines is that ores which were being produced at pre-war cost are now being left behind, never in all probability to be extracted, if once left behind, because the cost of going back would be too great. This means that the lives of such mines are being reduced in length—a procedure which is abhorrent to all gold miners. It is their invariable practice to keep mines going as long as possible by crushing the largest

possible payable tonnage, so that working expenses may be spread over the largest possible tonnage, thereby reducing the cost per pennyweight of gold, and consequently, of course, extracting the largest possible quantity of ore. We have been pressing this matter upon the Government for many months. The gold producers of the Empire have now had an opportunity of laying their case before a Committee appointed by the Treasury. The facts which were laid before them are indisputable—namely, that some very low grades of ore are being left behind, and that, if that is much longer continued, the gold production of the Empire must fall off, notwithstanding the advantageous and profitable discoveries on the Far East Rand. We have therefore done our best. There we must leave it, trusting that Government will see the justice of our complaint, that ours is practically the one industry which unquestionably suffers by the increased costs due to the war.

FINANCING LOW-GRADE MINES.

In the case of the Rand we have the misfortune to be interested in mines where it was necessary, if a profit was to be secured and lives were to be extended as long as possible, to crush very low grades, and you will see from the reports to which I refer that that is no longer possible, and that these mines are working either at so low a profit as to be practically unimportant, or, as happened in the last two or three months, at an actual loss. Having regard for our large interests, Consolidated Gold Fields is at present advancing moneys for the purpose of keeping the plants running in the hope that the present difficulties may be overcome, but unless a turn of the tide sets in we have, of course, to keep a careful watch as to the extent we are justified in supporting them. On the other hand, we have reason to be well satisfied with our large shareholding in the Sub Nigel Company, which company moreover holds the "key" position to further development in the region of the Far Eastern Rand in which it is situated. We have secured an interest in the adjoining Southern Van Ryn Reef Company, and possess important mynpacht rights on our farm Grootfontein, which, as you know, marches with the Sub Nigel area. So that there are all the elements for taking advantage of the result of current prospecting and developments which are full of possibilities, but we prefer to go step by step and not to be carried away by geological theories, and progress may therefore be slow. We and our associates did our duty by the shareholders of the Sub Nigel Company by guaranteeing the 300,000 shares recently offered to them, who showed their confidence in the future of that company by subscribing 265,955 thereof. A new vertical shaft has already been sunk and had reached a depth of 229 feet in August last. At the Southern Van Ryn Reef boreholes have been sunk, the results of which have been published, and our consulting engineer appears to be satisfied with the preliminary indications disclosed. He anticipates that it will be justifiable presently to start sinking the first permanent vertical shaft. The only other enterprise I need refer to in connection with Gold Fields operations in the neighbourhood of the Transvaal is that we have subscribed for debentures in an estate called Moreene, with a right for two years after peace is declared of promoting and floating a company which would have very large land concessions in Portuguese East Africa, favourably situated in many respects for the production not only of sugar, but other agricultural products. As regards the Gold and Platinum Company in Colombia, Central America, they have produced no less than 4,000 ounces of platinum up to date this year, and I think that the output last month was 1,000 ounces. The parts of the second dredge are in situ, and when they can get over labour difficulties and get that erected, of course the output will very materially increase. As regards Rhod-

esia, I have so recently addressed the shareholders of the Gold Fields Rhodesian Development Company that I need not detain you on the prospects of that company at any length. It has, as you are aware, after a severe struggle for some years, reduced its capital, which put it in the position of being able to distribute dividends, and the prospects of its principal mining properties, Shamva and Falcon, and its interests in Rhodesia Asbestos, are distinctly good, but here again I regret to say that the epidemic, especially in Falcon Mines, has seriously interfered with operations recently.

AMERICAN INTERESTS.

There remains for me to refer to our interests, through our holding in Gold Fields American Development Company, in the United States, and you will be glad to note from Baron de Ropp's report that in the case of all the companies referred to therein there have been improvements. He devotes, and naturally, most attention to the American Trona Corporation. Since he wrote it we have suffered the disappointments I have mentioned—namely, the non-delivery of the plant to complete the second unit, and of certain parts which would have secured further and immediate economies in the cost of production, due to shortage of labour, the demands for the services, and latterly to influenza, which has also seriously attacked the staff at Searles Lake. The effect of these is to postpone the date when Baron de Ropp confidently anticipated that the second unit would be running and, therefore, of receipts to which we were looking for some return on the ordinary stock, in addition to the cumulative interest on the preferred stock, the whole of which has been paid up to September last. But for these adverse factors, which it was impossible for us to foresee, I might have truthfully claimed that, subject to the delay of one year in the unfortunate experiment in a process which proved to be unsuitable, our confidence in this investment had been fully realised; and as regards that first year's failure, you must remember that we were dealing with an entirely novel proposition. There was no previous experience to help the chemists and engineers as to how to treat the brine most effectively. They have surmounted the difficulties, and I cannot speak too highly and gratefully of the unwearying efforts made by our representatives, Baron de Ropp and his associates, and by their legal advisers, which resulted in our receiving good and indefeasible title from the United States Government. Although we never had any doubt as to the justice of our claim, we were beset by opposition, which it required all our representatives' time and ability to overcome, so that our most favourable anticipations have been realised, save in respect of the cost of bringing the proposition to the productive stage. The first installation had to be scrapped, and the war has raised the cost of all material. These are great disappointments, especially so coming at the same moment as our difficulties in South Africa; but, as I said before, there is no need for despondency. As soon as the second unit is running the output will be largely increased, and the cost will be reduced, so that all that is called for is a little more patience. For the current year working profits will amount to between 2,000,000 dol. and 2,200,000 dol. How much of this will be taken by the United States Government in the shape of war profits tax is still uncertain.

VICTORY AND THE FUTURE.

The war has hit us very hard, but we may safely conclude that that is over, that the militarism of a united Germany is not merely scotched, but killed, and that the withering contempt of the rest of the world for their barbaric methods will be such a lesson, even to the short-sightedness of the German races, that a new generation may—it is to be hoped—realise that mili-

tarism such as they have hitherto been educated up to regard as a fetish is a snare and delusion. The terrible bereavements which we deplore must remain for years as a grievous oppression, but the trials we have faced and surmounted have had this glorious result—that the race has been tried and not found wanting. In our darkest moment the race has never despaired; and in a minor matter such as the affairs of this company, that, I can assure you, has been the attitude under heavy cares and disappointments of your managers, officials and staffs in several parts of the world. If it had not been for their determination to overcome each difficulty as it arose, the situation, certainly in South Africa, might have been far more discouraging than it is. We are not clear of danger yet, but it has so far been met calmly, resolutely, successfully, and therefore we ask you, in acknowledging your indebtedness to those who have served you well, to face the present position with

equal confidence that we shall come through it successfully. We may be legitimately the more confident because we are in such a satisfactory position as regards liquid reserves. Excluding the unrealised profits or inner reserve, we have something like one and a half million of liquid reserves, including the gilt-edged securities. It is, I can imagine, inevitable that capital will be required for the development of industries temporarily diverted from their original lines of business, and we are well equipped to take advantage of favourable opportunities for investment which are bound to be forthcoming. Among other things, the relation of industries to mining in South Africa is of mutual importance, and we may be disposed to take some part in the industrial development which is taking place in that country. We have a highly-trained technical staff, who have proved themselves capable of dealing with the industrial side of mining for many

years past, so that we may depend upon any proposals emanating from that side being carefully sifted and investigated before they are presented to us. Taking all these facts into consideration, I feel justified in concluding on a very hopeful and encouraging note as regards the future. I beg to move the resolution which stands in my name: "That the report of the directors and statement of accounts and balance-sheet at 30th June, 1918, and the recommendation of the directors that a cash dividend of 7½ per cent., free of income tax, be paid on the 2,000,000 ordinary shares of the company be adopted."

Mr. S. Christopherson seconded the motion, which was unanimously adopted.

The retiring directors, Sir Leigh Hoskyns, Colonel E. Frewen and Mr. R. Maguire, and the auditors, Messrs. Turquand Youngs and Co., were re-elected, and the proceedings terminated.

It is stated (says the Nairobi paper) that a valuable tin reef has been discovered in conquered territory by a member of the forces. The Uhuguru mica mines are now under the control of the Civil Administration, with effect from July 1.

Anglo-French Matabeleland.

The annual report of the Anglo-French Matabeleland to May 31 last states that the profit and loss account for the year shows a debit balance of £1,248, which, when deducted from the balance of £5,659 brought forward, leaves £4,411 to the credit of this account. The available cash, including the company's holding in 5 per cent. War Loan, less sundry creditors, amounts to £16,699. Ten claims on the "F" Reef have been abandoned, reducing the holding of gold claims to 97, on which no work has been done during this year. The company and the Anglo-French Exploration Co., Ltd., have jointly purchased a half interest in the 60 "Guruma Tumba" asbestos claims, and have pegged 60 claims on the extension. With a view to testing the ground some work has been done and encouraging disclosures made on the "Guruma Tumba" claims. The total claim holding in the Belingwe district now amounts to 133 claims. Schedule "B" attached to the report gives details of the farms representing 353,236 acres in the districts of Belingwe, Gwelo, Shangani, Nyanga, and Insiza. The sales of certain farms aggregating 10,485 acres have been cancelled at the request of the settler to whom they had been sold. The amounts paid up thereon have been credited to the purchase of the farms which he retains. This land reverts to the company, and the item of "farms and land" in the balance sheet has consequently increased, while the amount credited to profit and loss suspense account has been reduced. Two of the land purchasers have completed their payments and obtained transfer of their farms. The manager reports that owing principally to the exceedingly dry year in 1917, followed by an abnormally wet season in the early months of 1918, the cattle-ranching results have been unsatisfactory. The stock, which at the commencement of the year numbered 2,601, has been reduced to 2,503. An independent valuation made on June 27 last, based on the prices realised from sales of similar cattle, gives a total value of £17,541, which compares with a valuation of £21,742 at May 31, 1917. During the year 186 head were sold for £1,521, and 20 animals were purchased. An outbreak of quarter evil attacked the young stock, and resulted in the death of 171 head from this and other causes. The Rhodesian Meat Packing Company, to which reference was made last year, is expected to be in working order at an early date when a ready sale for its canned products is anticipated. The initial difficulties in obtaining the necessary plant and the heavy rains and subsequent floods this South African summer have delayed construction work. The board have under consideration the method to be adopted for the efficient carrying out of the ranching business, and are receiving the valuable assistance of the representatives of the Anglo-French Exploration Co., Ltd., in South Africa in the matter.

Cape Electric Tramways, Ltd.

During the year to June 30th last there was a substantial increase in the traffic receipts on both the Capetown and Port Elizabeth systems of this undertaking, and although the high cost of supplies and all materials, together with the further unavoidable rise in wages, have not permitted any reduction in the ratio of working expenditure, a distinct improvement in net earnings is shown, the profit on the year's working, after provision for debenture interest and redemption, being £39,801, compared with £31,169 for 1916-17. The dividend of five per cent. is the same as before, the sum carried forward being advanced from £2,591 to £5,831 after the repetition of an appropriation of £12,000 to reserve, increasing that fund to £224,157. The tendency of business conditions in South Africa is in a distinctly favourable direction, and the population of Capetown is increasing. Both these circumstances should have a beneficial effect upon the company's future, and although the shares have improved recently on the report, they are still attractive at the present price of 15s., the yield, after taking off the current dividend, being slightly over 7½ per cent.

Mayo Rhodesia Report.

The report of Mayo (Rhodesia) for the year ending July 31, 1918, shows the company to possess 346 claims. Investments total £20,653, shares and debentures in other companies £111,723. In the bank there is £2,302, and loan against securities accounts for £23,098. Loans from bankers and others, owing by the company, amounted to £29,717. The item of £20,653 is represented by Government stocks to the extent of 68 per cent., and on these there is a deficiency of about £1,700. On 50 per cent. of shares and debentures in other companies, taken at book cost, there is a deficiency of £7,800. The more important interests of the company are represented by Government stocks £20,653, British Cyanides 3,100 6 per cent. cum. pref. shares, Cam & Motor 2,250, Lonely Reef 3,722, Nyassa Co. 10,000, Shaniva 8,900, Tip-top 180,000 (of 1s. 6d. each), Union Steel Corporation of South Africa 3,800 6 per cent. debentures, 2,228 8 per cent. preference, and 4,245 7 per cent. preference, United Rhodesia 21,300 6 per cent. debentures, and 77,831 shares of 7s. 6d. fully paid. Of Zambesia Exploring, Mayo holds 15,027 5½ per cent. debentures and 467 shares of £1 each. It will be seen from the foregoing that the assets are numerous and important.

Bwana M'Kubwa Copper.

The report of the Bwana M'Kubwa Copper Mining Company for the year ended 30th June states that the financial position at the end of the year was as follows: Cash and War Loan at cost, £26,173; debtors, £2,158; estimated value of concentrates on hand unrealised, £17,000. Less creditors and bills payable, £3,737. Total, £41,595. There has been no change as regards the properties, concessions and rights in Northern Rhodesia belonging to the company. The properties comprise an area of about 47,097 acres (73½ square miles), of which 56½ square miles carry mineral rights. In February arrangements were made with the Government for the survey of the land areas so as to enable final title to be issued. During the year development work was continued, the total footage accomplished being 4,651. The ore tonnage treated was 16,295, which produced 1,419 tons of concentrates, of which 787 tons remained on hand at 30th June last, awaiting shipment. There are also at the mine about 45,000 tons of high grade tailings available for retreatment. Owing to the impossibility of obtaining sea freight, the mining and concentrating of high grade ore was suspended at the end of March last. The arrangement with Minerals Separation, Ltd., referred to at the last annual meeting has been completed, and a plant capable of treating 100 to 150 tons of ore per day has been shipped, and should be in operation during the early part of next year. As soon as the trial tests at the mine under ordinary working conditions have proved satisfactory, arrangements will be made for an extension of the plant to treat about 500 tons of ore per day.

While nothing much was done by the Scottish Mashonaland during the twelve months ended June 30, a substantial improvement is shown over the previous year's figures, a debit balance of £913 being converted into a credit of £1,183. A brief comparison is here given: Dividends, etc., 1918 £1,595, 1917 £410; profit on sales, 1918 £368, 1917 nil; loss on sales, 1918 nil, 1917 £604; total expenses, 1918 £793, 1917 £766. The directors have sold certain of the shareholdings, and put a total of £4,000 into Five Per Cent. War Bonds and Five Per Cent. War Loan, and bought 1,500 Geygerles and 1,000 Cloverfields, and a summary of the balance sheet states the relative positions: Investments at or under cost, 1918 £58,104, 1917 £60,349; market value, June 30, 1918 £29,174, 1917 £20,806; market value, mid October, 1918 £37,887, 1917 £30,990; cash, etc., 1918 £4,626, 1917 £473; creditors, 1918 £837, 1917 £390. A suggestion was made that the company should go into liquidation. The directors consider that the matter should be postponed till the conclusion of the war, when it will be left for the shareholders' decision.

* * * *

Dealing with mining in what was lately German East Africa, the *Board of Trade Journal* says: "The principal mining group in the Protectorate consisted of the Centralafrikanische Seën Gesellschaft (Central African Lakes Company), the Centralafrikanische Bergwerks Gesellschaft, the Kironda Goldminen Gesellschaft, and the Irangi Syndikat. The second company was an offspring of the first named and the third on offspring of the second. The Irangi Syndikat, founded in 1896 by the Diskonto Gesellschaft and the Norddeutsche Bank of Hamburg, was closely connected with the last two. The parent mining company, the Central African Lakes, founded in Berlin in 1902, was itself chiefly concerned with the salt works at Gothorp, and from 1910 onwards paid a steady 8 per cent. dividend. The Lakes Company's gold mining claims were represented by an interest in the subsidiary Bergwerks Company (1905), which

in its turn made over its rights in the Schenkwe Goldfields to the Kironda Goldmining Company. The original holding of the Lakes Company in the Bergwerks concern was one-half, but the proportion appears to have been since reduced. The Bergwerks and the Irangi Syndikat each held a one-fifth interest in the Kironda Company, founded in 1908, of which the capital was 1,250,000 marks. The Kironda Company produced nearly a million marks worth of gold in 1911 and made 224,000 marks of profit, but afterwards did less well. Gold mining in the Protectorate was upon a very small scale in comparison with the industry in the British possessions in South Africa."

* * * *

Sir Robert Hadfield, in his presidential address a few weeks ago to the Faraday Society at Burlington House, said that the war had been largely one of the metallurgist, the engineer, and the chemist. To the enemy scientists and technical men had been left the ignoble role of prostituting knowledge to the basest of uses. No matter how clever might have been their inhuman ideas with regard to poison gas, petrol flame throwers, and so on, the enemy's men of science in time to come would look back and find everything to be ashamed of and nothing of which they could be proud. On the other hand, the scientific and technical men on the Allies' side had not only clean hands but clean minds. While it had been necessary in self-defence for us to meet and counter-attack the many horrible devices of the enemy, there was not a man in the whole of the British Empire who would have introduced one of these terrible devices of the enemy. Huns of all classes were equally to blame for this war. Of what use, therefore, was it to talk about a League of Nations at this hour of the day? It would be a League of Fools if it included Germany after her unparalleled atrocities, inhumanity, and bestiality. To admit the Hun to any Council of Nations now would be like inviting a burglar or a murderer, who had been caught in the act, to join the council of a Y.M.C.A.

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Notes and News.

It is our intention to alter, at an early date, the title of this paper, to "The S.A. Mining and Engineering Journal," in order to indicate and emphasise the larger measure of attention that will in future be devoted to general engineering. Further notice will be given of the contemplated change.

The news of the death from pneumonia at Reefton, New Zealand, on Christmas Day, 1918, of Mr. Victor Hartog, has been received with genuine regret throughout South Africa. The deceased gentleman, a son of the well-known Kimberley pioneer, Mr. Henry Hartog, was born in Kimberley in 1881. He received his early education at Johannesburg and Kimberley, where he won the Barnato Scholarship. Electing to take up mining and geology he proceeded in turn to the South African College, Capetown, and the South African School of Mines, Kimberley, and graduated in the year 1902 as Mining Engineer and Bachelor of Science of the Cape University. Mr. Hartog's first professional engagement was with De Beers Consolidated Mines, Ltd., as mine surveyor, in which capacity he gained an intimate knowledge of the geology of the Kimberley Diamond Mines. He relinquished the post after three years, and proceeded to Columbia University, New York, to take a post-graduate course in economic geology. Here he had an opportunity of working up some of the material he had collected at Kimberley, and was awarded the A.M. (Master of Arts) degree for an admirable thesis on "The Petrography of the diamond-bearing Peridotite of Kimberley, South Africa," which was subsequently published in *Economic Geology*. On his return to South Africa Mr. Hartog held various appointments on the gold mines of the Witwatersrand, and in 1913 was appointed Deputy Inspector of Mines. It was characteristic of the man that despite his onerous duties he did not allow himself to neglect the scientific side of his work. At Columbia University, while examining with reflected light microscopic sections of blue ground from the De Beers Mine, he had noticed bright lines or leaves in the dark oxides of the rock—ilmeneite, chromite and magnetite—and was led by this circumstance to suspect that metals of the platinum group might be present. He accordingly separated and assayed small quantities of these oxides, and actually found them to contain appreciable amounts of platinum. Continuing these investigations in South Africa he was able to establish the presence of metals of the platinum group in the blue ground of the Kimberley, Bultfontein, Wesselton, Du Toit's Pan, Jagersfontein, and Premier Mines. Mr. Hartog was quick to realise what his discovery would mean if these metals could be economically extracted, and set about to devise a process for recovering them. Owing to lack of adequate financial support he was unfortunately unable to carry his researches to a satisfactory conclusion, and the very important question whether any of our Kimberlite contains workable quantities of platinum or allied metals thus remains unanswered. In 1914 Mr. Hartog was offered and accepted the post of acting manager of the Consolidated Goldfields of New Zealand. He held this important appointment until he died. A man of outstanding ability, a tireless worker, a genial companion, and a loyal friend, Victor Hartog was of a type we can ill afford to lose, and he will be sadly missed even outside the circle of his intimates. He leaves a widow and a young daughter. To these and to his relatives we tender our sincere sympathy.

In preparation for the greater scope for its operations which will be afforded by peace conditions, the African and European Investment Co., Ltd., further strengthened its financial position during the year ended June 30th, and since then its £200,000 Debentures in the Vereeniging Estates have been sold at a profit, thus further materi-

ally reducing liabilities. The operations for 1917-18 resulted in the increased profit of over £9,000, thus raising the balance at credit of profit and loss account to £10,400. The shareholdings entered in the balance sheet at £586,500 show at current prices "a very material appreciation" over their book value. Apart from well over a million acres of freehold ground (mainly in the Transvaal) the chief holdings are 133,200 Vereenigings, 114,135 Rhodesia Gold Mining and Investments, 72,675 Swaziland Corporations, 49,657 East Rand Minings, and so forth.

* * * *

Very important developments are disclosed in the directors' report of the East Rand Mining Estates for the year ended June 30th, 1918. Under the new Mining Leases Bill steps are now being taken by the Company's Engineers to locate the Mynpacht (representing an area of 985 claims) on the Farm Grootvlei, as well as the Discovery Claims, representing an additional 150 claims. The question of applying for a further mining area is also being carefully considered by the Consulting Engineer, as the negotiations for financing the property depend largely upon the total area which will ultimately be secured by the Company to mining purposes. Mining developments in the neighbourhood of the Company's properties have furnished additional proof of the high average value of the reef in this district, as far south as the farm Vlaktfontein. The coal rights over portions of the Farm Grootvlei and Palmietkuil are being disposed of to a new Company, called the Largo Colliery Company, the whole issued capital of which, viz., £110,000 in £1 shares, constitutes the purchase-price. Ten thousand of such shares are to be granted to Mr. Isaac Lewis for his services in connection with the matter.

* * * *

Sir Abe Bailey writes:—"After all the reckless crimes committed by the Germans I can quite understand the feeling among our people of bashing everyone—including the Kaiser—over the head, and making them pay up to the last farthing and taking a mortgage on their future as an indemnity; but when peace is signed then the fighting should cease. How are you going to keep them or their goods out of the Empire? In order to keep them out, what notice are you going to put up at the ports? How are you going to discriminate between the Germans from Germany and those from the colonies and the countries of the Allies, especially America? Are you going to banish from the Empire the Germans or sons of Germans who have fought on our side during the war? How are you going to prevent neutral countries selling German goods to residents within the Empire? Speaking from my knowledge of the position in South Africa, it will be impossible to carry on a boycott against them there. No; this is the time when the statesman, and not the politician in search of votes, must be called in. We have experienced a tremendous triumph, and may the blessing of a strong, sound and just, yet humane, peace crown our magnificent victory."

* * * *

Included in the valuable paper read before the S.A. Institution of Engineers on Wednesday night by Mr. Stuart Martin were the following details of the record sinking operations during the month of December last at the No. 15 shaft, Crown Mines, diameter 21ft. 6in. (20 feet in the clear):—During 31 days, 279 feet were sunk. Costs taken over 30 days (270 feet) totalled £13 4s. 8d. per foot. These costs include the whole of the station cost—walling only excluded. The average tons hoisted per blast was 90=8,100 tons for 30 sinking days, three blasts per day. An average of 31 natives per shift in shaft per day—93 boys. White men in shaft—Leading hand sinker, 1 per shift, 3 per day; second hand sinker, 1 per shift, 3 per day; staceman, 1 per day; master sinker, 1 per day. Total in shaft per day, 8. Total other whites employed on surface—Engine drivers, 3; boilermen, fitter blacksmith, machine

men and masons, workshops, etc., 9; grand total, 20. Surface boys—attendants, Total explosives used=15lbs. per foot sunk. Machines: 4 Holman Torpedo Sinkers; 2 Holman Jack Hammers. 279 feet sunk in 31 days constitutes the world's record for speed in sinking, covering all forms of shaft.

* * * *

The Luipaard's Vlei Estate has had another bad year, the result for the year to June 30th last being a loss of £3,449. The sum standing to credit of profit and loss was £126,158; deducting the above amount and £8,192 written off for depreciation, the balance is £114,517,

which the directors recommend be carried forward. This balance is largely represented by the additions which over a number of years have been made to the general equipment of the mine, and to the property, and to that extent is not in a liquid form. At a special meeting of debenture holders, held June 5th, 1918, authority was given to suspend for the financial year ended June 30th, 1918, the usual annual redemption of £8,000 nominal value of debentures. The outstanding amount of debentures remains at £63,945. The difficulties of working, due to war conditions, to which reference was made in last year's report, prevailed throughout the year in an increasing measure. A less plentiful supply of native labour has added to these difficulties. At the beginning of February last work at the mines suffered considerably from the effects of the unprecedented rainstorms which visited the Western Witwatersrand. The lower levels of the mine were flooded, a considerable outlay had to be incurred to pump the mine dry, and for the last five months of the financial year the lower levels were only partially available and the ordinary routine of work interfered with. The effect of these conditions is evidenced by the increase in working costs by 10.314d. per ton, coming on top of an increase of 1s. per ton during the previous year. This, together with a small reduction in the yield, has resulted in a working loss of 8.090d. per ton crushed. The experience of this company during the last two years is strong evidence of the necessity of some assistance being given to the lowgrade gold mines which have suffered greatly through the increase of working costs caused by war conditions, without being able to obtain a higher price for their product. The question of gold production, and the position of the low-grade mines, has recently become the subject of public discussion and of Government inquiry. The British Government has referred the question to a Special Commission, whose report is awaited with a great deal of concern by all companies in a similar position to this. Details of year's operations: 246,910 tons of ore crushed; average grade of ore sent to mill was 5.022 dwt. per ton, total recovery 97 p.c. of gold contents. The yield from all sources was £1 0s. 2.960d. per ton crushed. Average working expenditure, £1 0s. 11.059d. per ton, including charge for development redemption at 2s. 11.582d. per ton on tonnage crushed. The driving, raising, winzine, and cross-cutting accomplished during the year aggregated 10,448ft. Payable ore reserves as at June 30th last: Fully developed, 645,034 tons, average assay value 5.51 dwt. per ton; partially developed, 48,809 tons, average assay value 6.10 dwt. per ton.

* * * *

The report of the New Lisbon-Berlyn for the year to 30th September states that expenditure has amounted to £1,054, apart from interest, the amount of which has been added to the loan. The funds necessary, as far as they were not covered by revenue, have, as in previous years, been advanced by the H. E. Proprietary (New), Ltd. Further tests of the pyritic ore have been carried out, and the results obtained are indicative of a satisfactory percentage of sulphur in the ore tested. There is a growing demand in South Africa for sulphur for agricultural and other purposes. The opened up ore reserves are 103,013 tons, assaying 7.56 dwts. in gold and 0.347 per cent. in copper, with a small amount of silver, equal to £183,569, taking copper at £60 per ton and silver at 2s. per ounce. No allowance has been made for the sulphur contents.

TOPICS OF THE WEEK.

THE WIT. DEEP AFFAIR.

WE cannot pretend to give a verbatim report of the long-drawn-out proceedings at the Wit. Deep meeting this week, and we must ask our readers to be satisfied with the lengthy accounts that have appeared in the daily papers. The question at issue was as before, the control and administration of the company, and it must be admitted that the opposition organised by Messrs. Bloch, Holland, Gamble, and O'Flaherty put up a very determined fight. The whole afternoon's debate ultimately resolved itself into a discussion on the ethics of the use by the Central Mining people in their own favour of the proxies which the Custodian of Enemy Property in the Union and the Public Trustee in England had given them. For our part, we cannot understand the contention that such proxies are in any way tainted by German interest. They are not given by Germans, who, of course, have no say at all in the matter, but by the accredited representatives of the Union and Imperial Governments who presumably have first satisfied themselves that the Central Mining people are the most competent recipients of their trust and confidence. Holding that view, we cannot for the life of us see why the Corner House people should have weakly yielded to the noisy section who hurled about such epithets as "German-control" and "enemy votes." At once the stronger and the wiser course, it seems to us, would have been to have ousted the opposition by means of all the proxies held by the Central Mining people, and afterwards there could have been discussed the question of using the disputed proxies. The public verdict, we believe, would have been overwhelmingly in favour of that proceeding, and the present agitation would have quickly petered out. What has actually happened is that the whole trouble is prolonged indefinitely, and the terms of the adjournment motion give the opposition an undeserved opportunity to make an exaggerated pother over the whole sorry business. It is to be hoped that the Imperial, French and Union Governments who are now to be dragged into the thing will not take our eloquent friends who are out to protect the shareholders too seriously *Quis custodiet ipsos custodios?*

ENGINEERING ECONOMIES ON THE MINES.

THOSE of us who have been privileged to attend the last two meetings of the South African Institution of Engineers have been afforded ocular demonstration of the stimulating effect of the war on Rand engineering skill and inventive talent. Numerous devices have been on exhibition at those meetings drawn from the engineering shops of the Reef illustrating but not exhausting the long list of minor economies effected during, and as a consequence of, the war. As we understood that Mr. Izod, and Mr. Elsdon Dew, of the Corner House, were engaged for some time back in preparing a report for publication on the whole subject as far as the mines of their group were concerned, we purposely refrained from attempting to deal with it, and we print elsewhere in this issue the first instalment of Mr. Elsdon Dew's extraordinarily valuable and interesting report. The history of the movement was given by Mr. Elsdon Dew before the Institution of Engineers, and he credited Mr. Izod with its initiation as far back as December, 1916, when a round-table conference of resident engineers was held under Mr. Izod's presidency at the Corner House. The far-reaching and stimulating effects that this conference had on the engineers encouraged them to suggest other opportunities to economise, and the whole-hearted co-operation of the managers and engineers in the interchange of ideas was soon apparent on the mines. The engineers with their several foremen continued a regular campaign of mine economies, which is still proceeding, and which, although not possible to express in money value, is an actual fact fully recognised by those in control. Mr. Elsdon Dew related that some time ago it was felt desirable to summarise the many economies which had been effected. A close investigation at each mine was made and a full report circulated for comment. At the same time the mines were asked: (a) Which of the practised economies were new or practised before the war.

(b) Which of the new suggestions were valuable to them. (c) To furnish particulars of any new economies in practice, but not referred to in the report. A summary has been made of the replies received from the mines dealing with the enumerated items referred to, which is printed for general reference purposes. It is felt that this is the fairest manner in which this important matter can be dealt with without doing injustice to those that have not been able to deal fully with the question of economies through want of facilities on their own mines. Such an important factor will not be lost sight of by those who review the position, and where there are large workshops with up-to-date tools the staff on a mine has opportunities for devising and carrying out their ideas with much greater possibilities of success than on the smaller or older mines, where such equipment does not exist. Mr. Elsdon Dew declares that in summarising the position the endeavour has been to avoid overlooking any useful ideas, however small. It is hoped that the methods adopted of dealing with the subject will ensure that the information as circulated will be of value to the mines. It will be recognised that by systematic investigation of all engineering stores in use, economical control can be exercised. All the Rand technical societies have been dealing with similar problems, and the outcome is that a strong committee, comprising three representatives of each of the technical societies, have already met and are now preparing a scheme to have a joint exhibition of the various items locally manufactured and carried out under war conditions to meet the requirements of the mines. A very interesting exhibition may be expected, and one which may be the nucleus of a standing exhibition, showing important examples of locally manufactured articles.

CIRCULAR vs. RECTANGULAR SHAFTS.

THE large hall of the Chamber of Mines was packed on Wednesday night, when three of the leading consulting engineers of the Rand discussed the old yet ever new subject of circular versus rectangular shafts. The Institution of Engineers is fortunate in being able to secure for its transactions such valuable contributions on a subject of such great technical interest and importance, and the resulting discussion is bound to be of corresponding value and fruitfulness. It is impossible, of course, for us to print, as we would wish, all these papers in their entirety this week, but we give an instalment of Mr. Stuart Martin's views on circular shafts, since shafts of this form are less familiar in Rand mining practice. We hope to print the extraordinarily interesting views of Mr. W. L. White and Mr. C. E. Knecht in future issues. A noteworthy feature of all three contributions is the readiness exhibited by all their authors to admit the good points in favour of the opposing view. Thus, Mr. W. L. White, in concluding his paper, declared most emphatically that he was not an advocate of one type of shaft for all conditions. He holds that the very essence of mining is adaptation to conditions as they exist, and his paper merely explained the reasons why he had adopted the wide rectangular form of shaft in the conditions that existed. Again, Mr. C. E. Knecht, in introducing his paper, declared that he did not intend it to be an exhaustive treatment of the subject of Vertical Shafts, as obviously the subject was so large that it could not be dealt with in that manner in the 20 minutes at his disposal. "The aim," he said, "is merely to stimulate discussion upon the merits, under certain conditions, of the three types of shafts now being sunk on these fields, viz., Circular, Square, and Seven-compartment. The term "Square" is used for want of a better name: what is referred to is a four-compartment rectangular shaft, each compartment having the dimensions adopted at the New State Areas, viz., 11 ft. 3 in. by 6 ft. inside timbers. I will endeavour to bring forward the points for discussion, confining myself chiefly to the Seven-compartment Rectangular type as applied to the conditions prevalent in the Far East Rand—especially East of the Brakpan-Government Areas Section." Mr. Stuart Martin's view will be found in the extract from his paper printed elsewhere, and it is especially noteworthy that he has a good word to say for the elliptical form of shaft, which, theoretically, has so much in its favour. Mr. Knecht's paper, it should also be noted, contained a valuable tribute to the success of the cementation process in shaft sinking in wet strata at Daggafontein and Brakpan.

RAND MINES AND PEACE PROBLEMS.—II.

Clever Folly—War Currency and Prices—Why Mines Must Be Subsidised—Revolutions and Gold Outputs—Where the Attack Must Begin.

LAST week reference was made to the theory that prices of goods are determined mainly by the quantity of money circulating in a country; and it was pointed out that the cabled summary of the report of the Treasury (Inchcape) Committee appointed to consider the request of the gold owners for a subsidy showed that this theory had at last been adopted by an official Commission as the basis of British currency policy. It was also recalled that silver has been a great factor in these currency questions ever since 1550, and also that prices may be affected by the action of bankers and of private owners of gold or silver mines acting through the Government. Up to recent times prices were largely at the mercy of kings and queens and private monopolists who constantly interfered in these matters. Macaulay, referring to an earlier period, says that it was doubtful "whether all the misery which had been inflicted on the nation in a quarter of a century of bad kings, bad parliaments and bad judges was equal to the misery caused in a single year by bad crowns and bad shillings."

Let me say here that I am not making any pretence of dealing with the questions involved in this subject of prices and gold supply. There are many books of reference for those who are interested in the subject. I have merely selected one or two facts that bear on the points I want to make. The real difficulty is to condense the argument into an intelligible and reasoned statement.

CLEVER, BUT —?

And first, to continue with the principle laid down by the Inchcape Commission. A further cable gives a much fuller report of the findings of this Committee. I cannot refer in detail to this report, but it deserves the careful study of all mining men. My criticism of it is that it is sound and unimpeachable in its statement of the main principle involved in this big question. But just now it rather reminds me of the verdict passed upon a Rand engineer by one of our mine managers. "He is," said the manager, "the cleverest — fool God ever put guts into." It is the cleverest report that ever Disaster was wrapped in.

FOUR YEARS OF WAR.

Four years ago I, with many others, would have welcomed this statement of the "quantitative" theory of gold prices as the first evidence of sanity in banking and Treasury circles. It has been plain for years now that prices were creeping up; and my personal conclusion was that the cause of these growing quotations for all classes of goods was the increase in the gold output of the world over the last thirty years—that is to say, the Rand was slowly digging its own grave by pouring out gold and increasing the amount of money in circulation, and so stimulating enterprise and raising the prices of commodities (that is, working costs, including labour costs) to a level that would stop all low-grade mines, reduce the gold output and so stop the rise in prices. It was a natural process, as the Committee says of supply and demand. So strongly did I hold this view that I advised friends to act on it and regard the Rand as a sun that had passed its zenith and was declining to the west.

But four years of war have changed all that. Sound in economic theory as the refusal to subsidise gold mines unquestionably is, it is from the standpoint of the statesman an act of profound folly. If the Government of Mr. Lloyd George acts on the report of the Committee, counter action must be taken here and in Australia, in London, the United States, and in Europe to explain to the public the real issues involved and compel a revision of the verdict.

A GOLD SUBSIDY.

Let it be admitted that an ordinary subsidy would increase the price of gold to 23s. 9d. per sovereign. But the aid to the low-grade mines must not take the form of a subsidy to be added to the price of the sovereign. It must be a direct money subsidy from the Treasuries of the gold-using countries of the world; a grant to be written off after a certain term of years to the item, "Defence measures rendered necessary by the war." Every member of the Entente must contribute. It must be given to all the low-grade gold mines whose profits are threatened, whether in Australia, in Klondyke, or in South Africa. It would not amount in all to more than two millions a year. But there is evidence that this grant in aid will prevent a loss in the total gold output of about 16 millions sterling annually. The gold output for the whole world is, say, 90 millions a year, and a reduction of 16 millions or thereabouts yearly means a fall of about 17 per cent. What would be the effect of this fall in the gold output? Let the Committee answer. It says:

"Periods of increased gold production following on the discovery of further deposits of gold capable of extraction at low cost have been marked by an *increase* in the prices of commodities. Exhaustion of these sources of supply has been accompanied by a *decline* in the prices of commodities." (My italics.) Let us follow this admission of the effects of an increase or decrease of the gold supply a little further.

FIDDLING NEROS.

The Committee, it is clear, views with scientific equanimity the shutting down of all low-grade gold mines. Roughly, I reckon that a subsidy of about two millions annually will keep going mines that are producing about 16 millions of gold annually. This is only a rough guess, but it will serve to keep readers closer to the facts. The Committee therefore thinks it is not a matter of public concern that many gold mines should shut down, and that the world should enter on a period of lower prices for commodities! The Committee seems to have forgotten the war and all its human forces and passions. One is reminded of Bryan's passionate protest, quoted last week: "You shall not press down upon the brow of labour this crown of thorns. You shall not crucify mankind upon a cross of gold." The Committee has forgotten that lower prices react with crushing effect upon what Bryan calls "the struggling masses." Is this the time to raise the vague terrors of lower values and lower wages among the "masses" of the world?

SOME NECESSARY FIGURES.

It is a pity that these politicians and technical experts do not read history, and especially economic history. If they look up the history of gold and silver imports of the early part of the 19th century they will find that there was then a fall in the value of gold and silver produced. (It is necessary to bear in mind that before 1873 silver was a more prominent money and price element than gold.) Potosi, the great South American silver mine, fell on evil days more than 100 years ago, and there was no one to save it. The population at the mine fell from 130,000, which was the total in 1790, to 9,000 in 1826, and the number of stamping mills from 132 to 12. Jacob's figures give an average of 7 millions as the average yearly output of gold and silver combined between 1790 and 1810. In the next 20 years ending 1829 the average annual value produced was only four millions, and the effect on prices was this. The Napoleonic wars had raised prices to an exceptional height, just as this great war has done. The demand for raw materials, etc., continued till 1818, that is,

for three years after Waterloo, which was fought in 1815, and prices were maintained. Taking 100 as the starting average price-figure, the index number in 1818 was 142, the highest recorded in economic history. Then prices came down with a run. In 1820 there was a drop to 121, and by 1830 the index figure had fallen below 100 and was down to 91—a drop of 51 points in 12 years! But the reduction in the output of the precious metals continued till 1848. Californian gold began to affect the output in 1849. The index number of the prices of goods continued to fall down to 1849 when the index number which had been 142 just after the Napoleonic wars was down to 74! This meant a fall in prices of nearly 50 per cent.—that is to say, the scarcity of gold during the first half of the 19th century had nearly doubled its purchasing power, and the prices of goods were very low.

LOW PRICES AND REVOLUTION.

Now let us go back to the human side. After the French wars, discharged soldiers and sailors who could not be employed went about England smashing machinery. In 1825 there was a financial crisis following a stock market gamble, and seventy banks failed in England. In 1832 the fears of a revolution forced the House of Lords to agree to the great Reform Act—so-called; and a few years later the Chartist agitation began. Corn Laws were repealed in 1846 in response to the clamour for bread, and the policy of “cut the painter” was adopted as the principle of Colonial administration. The Boer republics were a creation of that time.

And as all know, 1848 was the year of revolutions. In that year the Chartists were suppressed in England, the Bourbons were driven from France and a Republic proclaimed, Belgium revolted, Berlin was barricaded against the revolutionaries, Austria was disrupted by war, Italy also broke out into revolutionary war and Ireland into rebellion. Unaccustomed to trace economic causes, historians have failed to trace the connection between the unrest of the 30 years between 1818 and 1848 and currency causes. But there can be no question that that period of low prices reacted on human values too, and revolutions would have continued had the discoveries of gold in California and Australia not changed the economic condition of the nations.

THE PROFITEER CRIMINAL.

It is necessary to make these brief references to past big events in order to emphasise my point that a period of lower gold returns with their consequent reactions on credit during the next ten years may well wreck civilisation. There is no space to dot the i's of this assertion fully; readers must use their common sense. Here, in 1918, a hundred years later, we have a position similar in its creative causes to that of 1818, but vastly more complex and with infinitely greater possibilities of disaster. There is again a very high range of prices. Profiteers have been allowed, especially here in South Africa where the critical gold situation is, to increase prices to a monstrous extent. This local action of men who would be put against a wall and shot if politicians understood the relative anti-social values of crimes, has reached a stage when a third of the gold output of South Africa is threatened with extinction. Probably, very probably, profiteers, acting unchecked in an abnormal position created by war, have driven up prices to similar heights in the goldfields of America and Australia; and if the loss of the output of gold from the Siberian mines be included, we may say that unless immediate action is taken the gold output of the world will soon fall 20 per cent. Such a calamity may well wreck civilisation.

A DANGEROUS SITUATION.

For though these gold mills grind slowly, they grind exceedingly small. We are, as I have said, facing an extremely dangerous and fragile economic world-situation. Every leading nation has great quantities of paper money circulating—and circulating, be it noted, as legal tender—that is, so far as the public is concerned, as gold. But the banks and lending institutions cannot confidently treat this

paper money as the basis of loans and credits. They are limited by law to a gold basis and will freely lend only when the gold in their possession bears a reasonable relation to their paper assets and liabilities. And as might have been expected, we hear of action taken by the bankers to further limit the credit foundations. The Cunliffe Commission (the chairman is Governor of the Bank of England) recently advised the early resumption of gold payments to wipe out its paper notes. The Bank of England, I must remind readers, is compelled by law to redeem all its bank notes in gold on demand. But at present this rule is suspended, as it was suspended during the whole period of the Napoleonic wars. Obviously a decision to resume gold payments will mean a vast withdrawal of bank and Treasury notes from circulation because people will exchange them for gold. But every such note withdrawn will mean just what this proposed reduction of the gold output will mean; it will help to restrict the supply of circulating money and so tend to bring about a fall in prices—and I have just indicated what a fall in real prices may mean in the human world.

TWO LAYERS OF INFLATED PRICES.

At the same time it is urgent that all this artificial inflation due to such minor causes as difficulties in production, difficulties with shipping, and difficulties due to human greed, be burst as soon as active men who realise the danger can take united action. Prices are inflated to-day in what may be called two layers or storeys. At the beginning of this century a sovereign could purchase more than 20s. worth, counting from an artificial line of values drawn more than half-a-century ago. But in July, 1914, a sovereign could purchase only 16s. worth, or thereabouts. This fall was a natural fall due to existing banking conventions and to the steady augmentation of the gold supply of the world from the Rand gold mines. But after the war started an entirely new and different increase in prices began, due directly to the adverse market and business conditions of the war. Boots, for example, went up in price partly because leather became dearer owing to the closing of Russian ports and partly owing to the absence of the boot-makers at the front. On these causes again there is the action of the boot-seller, who steadily writes up the prices of all his existing stock every time a new higher-priced consignment comes in, and so marks boots that may have cost him 10s. at 20s., which is the price of the later consignments. Thus the purchasing value of a sovereign may be to-day only 12s. War prices have reduced the value of gold, and the buying value of a sovereign, which was about 16s. or 17s. in 1914, is now some three or four shillings less. It is this extra three or four shillings, due to exceptional war conditions that must be the object of the early attack of the mining leaders and the Government.

I hope I have made it clear in these brief comments on a big subject that however correct the findings of Lord Incheape's Committee regarding gold prices may be, these are not the times for theoretical decisions. The world must prevent a fall in prices. Why this is necessary can be further indicated next week.

(To be continued.)

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THREE SEAS BRAND.

THE ADVANTAGES OF CIRCULAR SHAFIS.

Different Types of Shafts Compared—Cost the Chief Factor.

[By H. STUART MARTIN.]*

AT the request of the Council of the South African Institute of Engineers, I am pleased to submit the following short paper on the advantages of circular shafts as compared with other types. Before dealing with the matter of circular shafts in particular, a few explanatory notes are necessary.

Custom.—The selection of the type of shaft on different mining fields has depended to some measure upon the custom prevailing in the particular district or mining field, regardless of the advantages of other types, and therefore the type of most suitable shaft has not always had that consideration which is due.

Advantages of all Types.—There are advantages which can be shown for all the various types of shafts, including the elliptical shaft, according to the conditions of ground to be sunk through, the equipment necessary, the product to be hoisted, and the particular problem which belongs to each specific mining undertaking the engineer is asked to equip. As my colleagues, Messrs. Knecht and White, are writing on the advantages of rectangular shafts, I will trespass as little as possible on the advantages of that type of shaft, and deal with the circular shaft under conditions where I consider this type is most advantageous. This will necessitate a short description of shaft equipments under varying conditions of depth.

Chief Factor in deciding type of Shaft.—The chief factor which goes towards deciding the type of shaft is the minimum cost which will meet the requirements of a particular problem. Therefore no engineer can advocate any one type of shaft under all conditions as being preferable to all other types; although, at the outset, I might at once state that, in my opinion, the circular shaft can be made to meet nearly all conditions, and carries with it the greater number of advantages over any other type.

Strongest Form of Shaft.—If the strata to be sunk through consists of weak beds of shale (such as is often met with in carboniferous measures) or junction beds consisting of clays, sand and water, the strongest form of shaft is necessary to make the shaft walls permanently secure. The strongest method of securing shaft walls in weak ground is the arched wall with mass concrete walling or bricking. Under these conditions, the circular shaft has the advantage. The advantage in sinking a circular shaft in strong ground is in costs (roughly 50 per cent. less powder is required) and, as a rule, faster sinking.

Blasting.—In a vertical circular shaft, blasting is much simplified as compared with a rectangular shaft, for the following reasons: The minimum distance of excavation between the sides of an ordinary circular shaft is greater than that of a rectangular shaft designed for the same duty. A good round of sunping shots can, therefore, be blasted, leaving a regular, circular bench of ground to be subsequently blasted by a round of side holes placed in selected positions. Such side blasting holes, if discreetly placed, have the effect of securing a circular form of excavation to the required dimensions, without the necessity of any subsequent dressing off by hand or other means, thus breaking the minimum of waste ground, particularly so in faulty and jointed ground. In the case of a rectangular shaft, particular care must be taken during blasting operations to ensure the shaft being excavated to its full dimensions for the reception afterwards of the shaft timbers; and in variable ground, when a complete series of holes are fired consecutively across the shaft bottom in one operation, it is not always possible to guarantee the desired result. Unless successful blasting is obtained to give full clearance to required dimensions, a second operation of dressing is required, and more particularly at the corners of the shaft. There is, therefore, a tendency towards excavating more

ground than absolutely necessary in order to ensure sufficient clearance being produced by the first operation of blasting. Irregularity in excavation of a rectangular shaft implies additional cost in the fixing of shaft timbers.

Support.—The circular shaft lends itself to an easier method of temporary support than a rectangular shaft by the use of steel rings and cribbing close up to the blast (see sketch). This is most important in weak ground, and any bad ground can subsequently be completely lined by brick walling or mass concrete walling, making a very secure job which requires no further attention. In the same manner, ordinary feeders of water can be kept back by the use of water-tight walling. The difficulties caused by such feeders, which are a constant source of danger in the rectangular shaft, are done away with in a round shaft.

Sinking.—A circular shaft, 20 feet in the clear, is sunk at about 21 ft. 3 in. diameter in the hands of a skilful master-sinker. The quantity of explosives used averages about 15 lbs. (including primer cartridges) per foot sunk, when sinking in quartzite. The circular shaft can be sunk with a minimum of $1\frac{1}{2}$ in. to 2 in. waste rock broken; the usual thickness of walling is 6 in. to 9 in., allowing $1\frac{1}{2}$ in. to 2 in. behind the walling for grouting. A shaft sunk in this neat fashion is a great aid to rapid walling; from 60 to 80 feet of walling per 24 hours (3 shifts) is considered rapid walling. If a shaft is sunk through water-bearing measures, and is rectangular, the obstructions which exist in the form of shaft framing, etc., call for constant examination and attention, create a wet condition to the shaft which imposes a considerable charge in upkeep and winding equipment, whereas if the shaft is circular it may be suitably lined, is practically free from obstructions, and can be kept dry. A dry downcast shaft, particularly when mining at great depth, is most desirable.

Lining.—The modern practice in circular shafts of employing a system of lining, consisting either of cast iron, brickwork, or concrete, has, in addition to the factor of ground support, the great advantage of producing a perfectly smooth surface to ventilation. Suitable lining may also be introduced into a rectangular shaft, but even under the best of conditions the same ventilation efficiency, area for area, as compared with the circular shaft, cannot be obtained on account of the difference in form of the air passage and of the creation of eddy currents. The question of comparative cost of lining a circular shaft and a rectangular shaft with similar material and effecting the same resistance (strength is of importance in deciding upon the type of shaft to be sunk): Area for area, the cost of lining a circular shaft will be 30 to 40 per cent. less than that of a rectangular shaft with the same thickness of lining. In addition to this fact, the rectangular shaft will require a thicker and stronger lining than a circular shaft to give the same degree of safety, thereby further increasing the cost. A comparison may be made between a rectangular shaft completely equipped with frame timbers, lagging and guides, and a circular shaft, of size suitable to meet the same duty, completely lined with an ordinary concrete or brickwork lining. In such a parallel case the cost of the provision and fixture of timber framing and guides for the rectangular shaft would exceed the cost of the circular shaft lining and conductor equipment by an amount of possibly 30 per cent.

Safety in Sinking.—The "Galloway" stage in circular shafts provides for the maximum safety of the sinkers—providing a cover protecting the workers at the shaft bottom. On the score of safety, I think there is no comparison with this stage during sinking operations. It is used as a walling platform and for putting in pipes, cables, byats, etc., much of which work is done during sinking operations without danger to the sinkers.

*From paper read before the S.A.I. of E.

Water.—It is interesting to note that in Scotland, where the type of shaft employed has in the past always been rectangular, recent shafts, sunk to depth of approximately 2,000 feet, have been made circular in form. One advantage gained is greater facility for closing off water through the water-bearing measures. All such water encountered when sinking the older form of rectangular shafts has remained as a permanent pumping charge for the life of the mine. Two companies of importance may be mentioned in this connection, viz., Fife Coal Company, and William Dixon's, Ltd. If the quantity of water encountered does not justify the employment of sinking pumps, it being possible to keep the shaft drained by bailing, there is practically no difference in the type of shaft selected, whether circular or rectangular, for dealing with such water conditions. In either case a duplicate hoisting engine may be employed for the purpose of raising water only. This system of sinking through water in circular shafts has been successfully employed in Great Britain, two complete hoisting sets being employed for raising dirt and water respectively. Where sinking pumps are required, they can be more conveniently handled in a circular shaft, where more space exists in which the attendants can work.

Cementation Process.—Since the introduction of the "cementation process" for shaft sinking, the question of dealing with abnormal quantities of water has been practically settled, and consequently the usual consideration and precautions which must be taken for a wet sinking are unnecessary. The chief features of this process, however, as relating to the best type of shaft to adopt in connection with it, and which are of considerable importance, are as follows:—(1) A more certain and efficient treatment of the water-bearing measures, at a smaller cost, is obtainable in the case of a circular shaft. (2) The circular shaft is more

suitable for fixing a water-tight lining, behind which every small leakage of water from the treated ground can be closed off.

Ventilation.—The majority of modern circular shafts are devoid of any serious obstruction, such as buntons or girders for guides (with the exception of water or compressed air columns and cable supports), as a result of the employment of steel rope guides. The frictional resistance to ventilation from this cause is therefore reduced to a minimum in a circular shaft, as compared with that presented by the systematic timbering in a rectangular shaft. In the case of mines having extensive workings and necessitating the installation of large capacity fans, the reduction of shaft friction to a minimum is a matter of the greatest importance, resulting in substantial increase of ventilation efficiency, and consequent reduced running cost.

(To be continued.)

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

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THE WEEK IN THE SHAREMARKET.

More Activity at Improving Prices—New Modders and States Rising.

On Saturday morning Geduld Props, which had been steadily receding overnight from their maximum of 41s., came back to 40s. sales and buyers. The options were quoted at 9s. 9d., 10s. 6d. Modder Bs. and Deeps came slightly easier and Modder East just a trifle harder. Business was restricted. After the call a sale of West Springs went through at 23s. 9d. with sellers at the price. The call was quiet on Monday morning with an advance in New Modders and a fall in Government Areas. In the course of the day prices hardened, beginning with West Springs, which touched 24s. 6d.; Geduld Props rose to 41s. 9d., 42s.; Modder East was sold at 19s., but the options did not improve proportionately. There was considerably more activity at Tuesday's call and prices on the whole were quite satisfactory. West Springs made a further advance, but Gedulds were not quite up to the overnight's quotation. The Modder lot were firm with little change, but that to the good. Van Ryn Deeps and the two Sub Nigels came better. The only features of Wednesday's call were an advance in New Modders and Pretoria Cements, and a fall in Alkalis. During the day Geduld Props rose to 42s. 6d.; Modder East to 19s. 3d.; four-year Options to 6s.; and Government Areas to 93s. 9d., all sales. There was a buyer of the three-year Options at 4s. 10d. At the opening on Friday Geduld Props were sold at 43s. and Modder Bs. at £7 10s. On call Government Areas and Springs were harder. Wit. Deeps suffered somewhat from the perivivid oratory at the meeting, otherwise prices were unchanged and business limited. Nothing has been doing in outside stocks during the past week. There was a buying quotation of Henderson's Estates at 4s. 6d. and a sale of Monteleos at 25s. and odd lots at 20s.

There was a good deal more activity in the market on Friday morning and the volume of business increased in proportion. Prices were generally higher, the only exception being Southern Van Ryn. The following shows the alteration in prices:—Sales: Dagga Mines, 25s.; Options, 5s. 6d.; Main Reefs, 11s. 6d.; Government Areas, 95s. 3d. and 95s. 6d.; Hume Pipes, 29s.; Leeuwpoots, 9s. 5d.; Laee Props, 11s. 6d.; Modder Deep, £7 7s. 6d.; Modder East, 19s. 6d.; New State Areas, 22s.; Sub Nigels (10s.), 17s.; Springs, 66s. 3d.; Wit. Deeps, 12s.; Zaaiplaats, 15s. 5d. Buyers and sellers: Brakpans, 67s. 6d., 70s.; Modder Bs., £7 10s., £7 15s.; Modder East three-year Options, 4s. 11d., 5s. 3d.; New Modders, £26 15s., £27; Rand Colliery, 3s. 6d., buyer; Rand Selections, 82s., 83s. 6d.; Rooibergs, 6s. 9d., 7s.; Southern Van Ryns, 13s. 3d., 13s. 6d.; S.A. Lands, 6s. 3d., 6s. 6d.; Alkalis, 32s. 6d., 35s.; West Springs Options, 10s. 6d., 10s. 9d.

	Fri., 10th.	Sat., 11th.	Mon., 13th.	Tues., 14th.	Wed., 15th.	Thurs., 16th.
African Farms	15 0*	15 0*	15 0*	15 0*	15 0*	15 0*
Anglo-Americans	—	32 6†	—	32 6†	32 6†	32 6†
Apex Mines	—	7 0*	7 0*	—	—	7 1*
Bantjes	2 2*	2 2*	2 2*	2 3	2 2*	2 2
Brakpan Mines	67 6†	65 0*	65 0*	66 0*	66 0*	—
Breyten Collieries	11 6*	11 9*	11 9*	11 9*	11 9*	11 9*
Brick and Potteries	3 6*	3 6*	—	3 6*	—	—
British South Africa	23 0*	—	—	25 0†	22 6*	25 0†
Bushveld Tins	0 8*	—	0 8*	0 8*	0 8*	0 9
Cassel Coals	38 6†	38 6†	38 0†	—	38 0†	—
Cinderella Cons.	—	5 0†	5 0†	5 0†	5 0†	5 0†
City and Suburbans	7 6*	7 6*	7 6*	8 3	—	7 9*
City Deeps	46 6*	46 0*	47 0*	48 0*	47 0*	48 0*
Clydesdale Collieries	—	—	—	—	—	23 6
Cons. Investment	22 6*	22 6*	22 6*	22 6*	22 6*	22 6*
Cons. Langlaagte	17 0*	17 3*	17 3*	17 6*	17 6*	17 6*
Cons. Main Reefs	11 3*	11 6	11 0*	11 6	11 6	11 9†
Cons. Mines Selection	25 0	24 9*	—	—	24 6	24 6*
Coronation Freeholds	1 1*	1 3	1 2*	1 3	1 3*	1 4
Coronation Syndicates	—	—	2 0†	—	—	—
Crown Diamonds	5 0*	—	5 0*	—	5 0*	5 0*
Daggafonteins	23 3*	23 0*	23 3*	23 3*	23 3*	—
Do. Options	4 9*	5 0†	4 9*	4 9	4 9*	—
East Rand Coals	2 4	2 3*	2 4	2 4	2 3*	2 3*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 10th.	Sat., 11th.	Mon., 13th.	Tues., 14th.	Wed., 15th.	Thurs., 16th.
East Rand Deeps	0 11*	—	0 11*	0 11*	1 0†	1 0*
East Rand Minings	19 0†	19 0†	17 0*	—	17 6*	19 0†
East Rand Props	5 11*	5 9*	6 0†	6 3A	6 0*	6 3*
East Rand Debentures	£66*	£66*	£66*	£66*	£66*	£66*
Eastern Gold Mines	1 5*	1 3*	1 4*	1 4*	1 4*	1 3*
Frank Smith Diamonds	3 6	—	—	—	3 9†	3 0*
Geduld Props	40 6	40 0	40 6	41 6	41 6	43 0
Glencoe Collieries	6 0*	6 0*	6 0*	6 6*	6 6*	7 9†
Glynn's Lydenburgs	26 0*	25 6*	25 6*	26 0*	26 0*	—
Government Areas	92 6*	92 9	92 3	92 3	92 6	95 0A
Jhb. Board of Executors	28 0*	—	28 0*	—	—	—
Jupiters	5 0†	4 6*	5 0†	4 6*	4 6*	4 5*
Klerksdorp Props	3 0*	3 0*	—	3 0*	3 0*	3 0*
Knight Centrals	6 1	6 1	6 1*	6 0*	6 1*	5 10*
Lace Props	11 0*	11 1*	11 2	11 1*	11 3*	11 3*
Leeuwpoot Tins	24 6	24 3*	—	—	—	24 6*
Lydenburg Farms	8 11	8 9*	8 9*	9 0	9 0	9 3*
Meyer and Charltons	83 0*	—	—	—	—	—
Modder B's	149 6	148 0*	148 0*	149 0*	148 0*	149 0*
Modder Deeps	145 0	144 0*	—	143 9*	145 0*	145 0*
Modder E'sts	18 4*	18 6	18 7½	19 0	19 0*	19 0*
Do. Options (3 years)	4 9*	4 8	4 8*	4 8*	4 9*	4 9*
Do. Options (4 years)	5 10	6 0A	5 10	5 9	5 10*	5 10*
Hume Pipes	29 0*	28 9	28 6*	30 0†	28 0*	28 6*
De Beers Deferred	£15½*	—	£15½*	£15½*	£15½†	£15½*
Natal Navigation Colls.	—	21 0*	—	21 0*	21 0*	21 0*
National Banks	292 6*	—	290 0*	—	292 6*	292 6*
New Boksburgs	1 3*	1 0*	1 0*	1 0	—	1 0*
New Eland Diamonds	23 0*	22 6*	—	—	22 0*	25 0†
New Era Cons.	9 10*	9 9*	9 6*	9 7*	9 11*	10 3
New Geduld Deeps	5 9*	6 0†	5 9*	5 9*	5 9*	5 9*
New Heriots	12 6*	13 0*	13 3*	13 0	13 6*	13 0*
New Kleinfonteins	10 3*	11 0†	10 6	10 0	10 0	10 0
New Modders	520 0	525 0*	529 6	532 6	538 9A	532 6*
Nigels	4 6*	6 0†	4 6*	4 0*	4 0*	6 0†
Nourse Mines	17 0†	—	—	—	—	—
Premier Preferreds	145 0*	—	150 0*	150 0*	150 0*	150 0*
Pretoria Cements	57 0	56 0*	56 0*	58 0	61 0*	61 0*
Princess Estates	2 9*	2 9*	2 9*	2 10*	2 10*	2 10*
Rand Collieries	3 0*	3 0*	3 0*	3 0*	3 6	3 3*
Rand Nucleus	1 6*	—	—	—	2 0†	1 6*
Rand Selections	—	82 0*	82 6	84 0†	81 0*	81 0*
Randfontein Deeps	5 0*	5 0*	5 0*	5 0*	5 0*	5 0*
Randfontein Estates	13 0*	—	13 6*	13 9*	13 6*	14 0*
Rooibergs	6 0*	—	6 3*	6 6*	6 6*	6 6*
Rodepoort Uniteds	2 3*	2 3*	2 0*	2 0*	2 2*	2 6*
Ryan Nigels	3 3	3 3*	3 3*	3 3*	3 3*	3 3*
Shebas	1 9*	—	1 9*	—	1 9*	1 9*
Simmer and Jacks	—	—	6 0†	6 0†	6 0†	5 9†
Simmer Deeps	2 0*	2 0*	2 0*	2 0*	—	2 6†
S.A. Breweries	—	—	32 6*	32 6*	33 0*	32 6*
S.A. Lands	5 11*	6 1	5 10*	5 10*	6 0	6 0
Springs Mines	65 3*	65 0	65 3	65 6	65 6	66 0*
Sub Nigels	27 3*	27 0*	27 0*	27 3	27 6*	27 6
Swaziland Tins	—	—	—	27 6†	—	—
Transvaal Lands	25 0*	25 0*	25 0*	—	—	26 0*
Transvaal G.M. Estates	12 6*	13 0*	13 6*	—	—	13 6*
Van Ryn Deeps	67 9*	67 6*	67 6*	68 3	68 3†	68 3†
Village Deeps	16 0*	16 0*	16 0*	16 3*	16 0*	16 0*
West Rand Cons.	—	4 3*	4 3*	—	—	—
Western Rand Estates	—	—	—	2 0*	—	2 3
Witbank Collieries	55 0*	—	—	55 6*	—	55 6*
Wit. Deeps	13 6†	11 0*	13 0†	13 6†	12 6*	11 9*
Wit. Townships	—	30 0†	27 6*	29 0†	27 6*	—
Wolhuters	3 1	—	3 2*	—	3 0*	3 0*
Zaaiplaats Tins	14 10*	15 0	14 10*	15 1	15 0*	15 0*
New States	21 3†	21 3	21 3	21 3	21 6*	21 6*
Southern Van Ryns	12 9	12 10½	12 10½	13 6	13 6*	13 8
S.A. Alkalis	36 0*	36 0†	38 0†	35 0*	33 6*	35 0B
West Springs	23 6	23 6*	23 9	24 9	25 0A	24 3*
Do. Options	9 9*	10 6†	10 0*	10 6	10 6*	10 6*

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*Buyers. †Sellers. ‡Odd lots. §Ex London.

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Bros, Camborne, England. Top Photo: Headgear No. 15 Shaft. Bottom Photo: Group of Shaftsinkers.

Names (reading left to right): Front row: J. Ninnis, I. Williams, W. Evans, A. E. Rees, Ivor Rees (master sinker), T. J. Lindsay, W. E. Morgan, W. J. Williams. 2nd row: G. B. Gunn, E. Harris, T. G. Phillips, C. H. Pearce, T. C. Cridland, A. B. Wright. Back: J. Doonan, J. Lewis.

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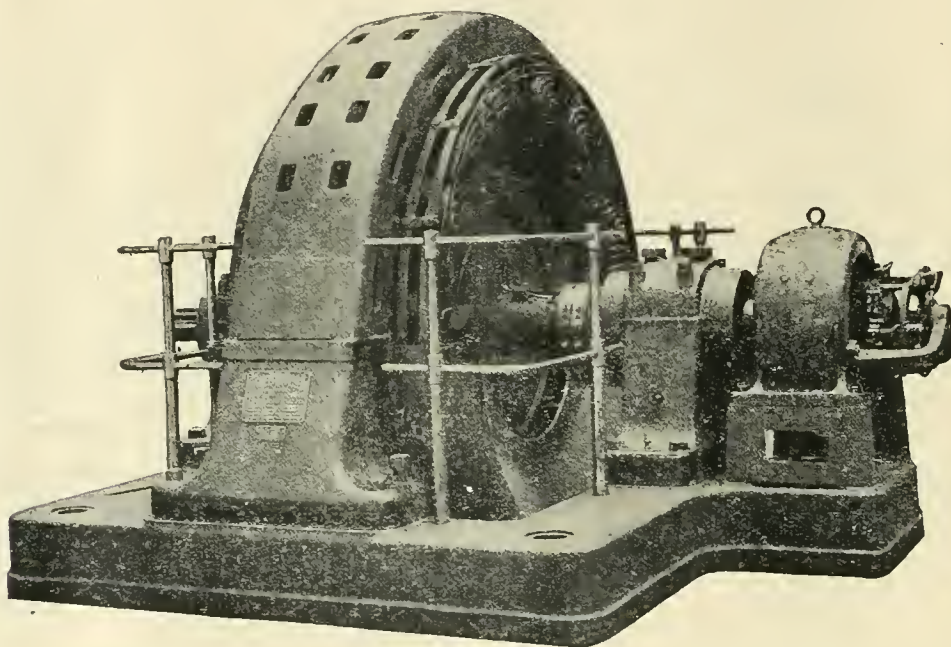
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THE PRICE OF COAL AND THE BY-PRODUCT INDUSTRY.

The Question of Profiteering in the Transvaal—Government Urged to Aid By-Product Recovery.

THE price of coal and the waste of by-products were dealt with at the recent meeting of the Middelburg Steam, Coal and Coke Co., by Mr. Alfred T. Maer, the managing director. Mr. Maer said:—The small price of coal is rather a sore point in the Transvaal. The internal coal trade is looked upon as a source of profiteering, but you will see from the price we realised for our coal—5s. 2d. per ton—that there was certainly no profiteering so far as the mines in the Transvaal Coal Owners' Association are concerned, and they output 90 per cent. of the coal. The only chance of making a higher price was with regard to the comparatively small proportion of the trade which deals with export coal. The trade is a healthy one, and is increasing yearly, but even now it is only 13 per cent. of the total output of the Transvaal collieries. In Durban, I believe, the price is something like 3s. per ton more than the pre-war price. That is owing to the fact that the Natal trade is, as to over 50 per cent., an export trade. Natal is in the fortunate position of having its own port, Durban; the Transvaal has the use of perhaps one of the finest ports in the world, but unfortunately it is a Portuguese port, and there are considerable difficulties in working a trade to the best advantage through a foreign port. The general effect of war upon the coal trade there has been not to put up the price, and I am rather surprised that these coal resources of the Empire have not been taken fuller advantage of in time of war. They have been taken very little advantage of—no advantage of at all for munition purposes; and practically the by-products of the collieries have been neglected. In peace times we should have the advantage that these coal resources are there, and although I, for one, do not anticipate or expect or hope that a higher price will be charged

for coal internally, I do expect that a higher price will be obtained for foreign coal, and certainly the coal should be used far more economically in South Africa itself. A large proportion of the small coal has not been utilised at all. It is dumped on the collieries. I believe we have something like 500,000 tons of small coal dumped at our colliery alone, and within three or four miles of the big centre, Witbank, there are 5,000,000 or 6,000,000 tons of small coal dumped which contains volatile products equal to 30 to 35 gallons per ton. If a central plant were put down at Witbank, as I have advocated for years past, it could treat the whole of this small coal that is dumped now and the small coal that is made, and the profits of the collieries ought to be increased by at least 50 per cent. from the same output of coal as is obtained at the present day.

A COMBINED PLANT.

A combined plant is an essential thing for a treatment plant of this kind, because you have not only to deal with the volatile products, but you have also to deal with sulphate of ammonia, which, in an agricultural country, is of the very greatest value, and is now being entirely wasted. I submit that this is a question that the Union Government of South Africa ought to take up seriously, either by advancing through a central company money at a low rate of interest to put up a big plant capable of dealing with, say, 100,000 tons a month, or in some way by assisting the collieries, or even by taking over the dumps themselves and making it a Government scheme to deal with these resources, which are only one of the great resources of the Union of South Africa.

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THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*—II.

[By P. A. WAGNER, B.Sc., Ing.D.]

As to the amount of gold that the mines of the Rand may be expected to produce, it is of interest to recall that Sir Robert Kotzé, in evidence before the Dominions Royal Commission, in 1914, estimated the tonnage of ore in the mines producing at that date to be 587,000,000, and in the mines and areas not then producing at at least the same quantity. Having regard to the disappointing gold values encountered at depth in some sections of the West Rand and in the neighbourhood of Boksburg, it would appear that the estimate in regard to mines crushing in 1914 was rather too high, while, if developments to date on the Far East Rand can be accepted as a criterion, that in regard to areas not then producing was undoubtedly too low. Allowing for this, and assuming that working costs after the war will recede to their average level during the period 1908-1914—namely, 17s. 9½d. per ton—which will depend very largely upon the policy adopted by the Allied nations with regard to the prices of commodities,† I have estimated—so many uncertain factors enter into the calculation that the estimate is largely conjectural—that the total amount of gold still capable of being profitably extracted on the Witwatersrand is in the neighbourhood of £1,200,000,000. The probable life of the field is to an even greater extent a matter of conjecture, as it will depend on the rate at which the existing mines become exhausted and new ones are opened up to take their places. There can be no question, however, that 50 years hence the Far East Rand—and possibly certain other sections of the Witwatersrand—will still be the scene on a very considerable scale of gold-mining operations. With regard to the gold mines of the "outside" districts of the Transvaal—Lydenburg, Barberton, and Leydsdorp—the outlook is not at all encouraging. Recent developments at most of the mines in these districts have been very disappointing. Several properties, including the celebrated Sheba at Barberton, have in consequence been closed down, and the reserves of others are being steadily depleted. It would appear, altogether, that unless fresh discoveries are made, the output of the "outside" districts will decline very considerably during the next few years. In the Cape Province alluvial gold mining is still being carried on on the Millwood field in the Knysna district. The output, however, is very small, and in 1916 amounted only to 31·28 ounces, valued at £132.

SILVER.

No very important deposits of this metal have hitherto been discovered in the Union.‡ Practically the whole of the silver recovered is contained in the gold bullion, of which it forms roughly 10 per cent. Small quantities of silver are also contained in the copper ores of Little Namaqualand, and in the lead ores worked at different localities in the Transvaal, but in regard to this no figures are available. It will be noted that, while the weight of the silver produced in 1917 was lower by 14,450·8 ounces than that produced in 1913, the value was almost 50 per cent. higher, owing to the great advance in the price of the metal.

DIAMONDS.

The production of diamonds in the territories embraced in the Union of South Africa from the year 1867, when the first discovery was made, to the end of April, 1918, reached

the enormous total of 137,868,630 carats—31 short tons—of a declared value of £216,165,760.§ The latter figure is certainly very much below what the diamonds actually realised in Europe and America, and probably not much more than one-half of what they were finally sold for in a cut state. The industry ranks next to gold-mining in importance. The output reached its maximum in 1913, when there were produced 5,163,547 carats, valued at £11,389,807. It is common knowledge, however, that there was a considerable over-production of diamonds in that year, and the average annual output for the period 1910-1912, namely, £9,596,804, gives a fairer indication of the pre-war rate of production. As a result of the outbreak of hostilities the output dropped in 1914 to 2,801,017 carats, valued at £5,487,194, and in 1915 to 103,386 carats, valued at £399,810—the lowest figures on record in the period 1870-1918. Within the past two years there has been a remarkable recovery, and the value of the output, of which about 86·5 per cent. is contributed by the mines and 13·5 per cent. by the alluvial fields, is now rapidly approaching its normal pre-war level. This is mainly a result of the agreement, in regard to the production and sale of diamonds, reached by the principal companies, which has placed the industry on a sounder basis than it has ever been. The policy of judiciously feeding the market, or, in other words, of carefully adjusting the output to the amount of money that the world is prepared or inclined to expend on the purchase of diamonds, has led to a very considerable increase in the price of the gems, as is evidenced by the following figures: Average value per carat of the diamonds produced by the mines of the Union: 1913, 41s. 6d.; 1914, 37s.; 1915, —; 1916, 43s. 11d.; 1917, 49s. 2d. Indeed, prices are higher at the present time than at any previous period, and there is every prospect of their going yet higher. The progressive appreciation in value is not only of great advantage to the producers themselves, but of the utmost benefit to the State; directly, because it tends greatly to increase the profits of the mining companies, and thus the revenue accruing to the Government, and indirectly, because it has the effect of conserving the diamond resources of the Union and prolonging indefinitely the lives of the existing mines. If the increase in prices continue, there can be no doubt, moreover, that certain mines, hitherto unpayable, will be brought within the limit of profitable exploitation, and the already enormous diamond reserves of the Union thereby increased. Finally, the policy of regulating and controlling sales has inspired the whole diamond industry with absolute confidence, since, as the Chairman of De Beers put it at the last annual meeting of that company: "Cutters, polishers, factors, and jewellers now know that they can, without fear of rough diamonds being forced on the market, hold large stocks, and bankers can grant financial facilities to the trade generally, knowing that our product will not be offered in excess of requirements, and that merchants and others will not be faced with a serious fall in prices or the risk of over-production." As regards the possibility of fresh diamond discoveries, there can be no question, as I have elsewhere pointed out,¶ that further payable pipes await discovery, and will be discovered. So far as existing knowledge can be accepted as a guide, there is no reason why pipes or dykes of kimberlite should not be found anywhere within the limits of the South African plateau. The profitable occurrences so far discovered are, however, confined to a tract of country, about 160 miles wide, extending in a north-easterly direction from the Jagersfontein Mine in

* Being Presidential Address read before the S.A. Association for the Advancement of Science.

†It is contended by some economists (*vide The Round Table*, September, 1917) that prices after the war should be maintained at the highest level possible in order to lessen the burden imposed on the different communities by the huge interest-bearing war loans contracted by their Governments. If this is done, there is little prospect of any very appreciable diminution in working costs for a long time to come.

‡South Africa appears to be rather poorly off as regards silver, lead and zinc, which are frequently associated in ore deposits. This may possibly be due to great denudation that the sub-continent has undergone, as deposits of these metals, speaking generally, are formed close to the surface.

§This figure is very considerably in excess of that given under the heading, "Progressive Totals of Mineral Production," in the last Annual Report of the Government Mining Engineers. The "Progressive Totals," however, do not take into account the diamond production of the Cape Colony previous to 1883—prior to which date no accurate data are available—or that of the Orange Free State previous to 1904.

¶The reserve of blue ground actually in sight in the five Kimberley mines of the De Beers Company alone is estimated at 108,750,000 loads.

*Cf. *The Diamond Fields of Southern Africa*, p. 242.

the south to the Premier Mine in the north, and it is presumably within this "Diamond Belt," as it may for convenience be termed, that any discoveries of importance will be made. What the future holds in this respect it is impossible to say, but having regard to the enormous financial resources of the combination controlling the market, it may be asserted with confidence that the discovery of even a very large pipe—unless it were of phenomenal richness—could not lead to any serious disorganization of the diamond industry. The alluvial diamond diggings, which, as already stated, are responsible for about 13.5 per cent. by value of the total output of the Union, are likely to continue for many years to be an important source of production. This applies particularly to the Griqualand West fields, where diamond digging has reached the condition of a comparatively settled industry conducted on well-established lines of experience, and where it has come gradually to be realised that, while the element of chance undoubtedly enters very largely, finds, generally speaking, are in proportion to energy and intelligence expended.* The only serious competitor of the Union in the matter of diamond production is the Protectorate of the South-West Africa, the output of which amounts at the present time to about 30,000 carats per month.

COAL.

Coal, next to gold and diamonds, is the most important mineral product of the Union. The output amounted in 1917 to 10,382,623 tons, valued at £3,255,659, against 10,007,502 tons, valued at £2,739,665 in 1916, and 8,801,216 tons, valued at £2,240,458 in 1913. The marked increase in comparison with 1913 is due mainly to the increasing quantity of coal bunkered and exported, which in 1917 reached the record figure of 2,343,552 tons, valued at £543,211. This is largely a result of conditions due to the war. In view, however, of the favourable geographical situation of the Union, the excellent facilities for coaling that exist at our principal ports, the fact that the price of coal at the pit mouth is lower in South Africa than in any country in the world with the exception of India,† and that the quality of South African coal has now become established abroad, there is every reason to anticipate—provided that the coal-owners receive fair treatment in the matter of railway rates—that the export and bunker trade will continue steadily to expand. In particular, an export trade with the Argentine and other South American States appears to offer great possibilities, as South African coal can be landed on the east coast of South America at a much lower price than North American or European coal. The establishment of a direct service of steamships between South Africa and Buenos Ayres, which is also very desirable for other reasons, would greatly assist matters in this direction, and is certainly worthy of the consideration of the Union Government and the big shipping companies carrying on trade with South Africa. In regard to the available reserves of coal in the Union, some of you will remember that these were estimated in 1911 at 56,200,000,000 tons, of which 36,000,000,000 tons fall to the share of the Transvaal. Both estimates, which it is only fair to state were admitted to be very approximate, are now generally conceded to have erred considerably on the conservative side, and it is very desirable, both in order to settle this important question and to obtain accurate information in regard to the suitability of the various South African coals for the production of coke and the manufacture of ammonium sulphate and other by-products, that a detailed survey of our coal-fields be made on the lines recommended by the Fuel Research Board of Great Britain.

*Cf. *Annual Report, Government Mining Engineer*, 1916, p. 64.

†The following table gives the average price per ton of coal at the pit's mouth in 1912 in the principal coal-producing countries:—

	s. d.		s. d.
United Kingdom.....	9 0½	British India.....	4 6
Germany.....	10 6½	Australia.....	7 6½
France.....	12 8½	New Zealand.....	10 11½
Belgium.....	13 5½	Canada.....	11 5½
United States.....	6 1	Union of South Africa.....	4 11

COKE, TAR, AND COAL BY-PRODUCTS.

Most of the Natal coals and much of the coal found in the Central Witbank district of the Transvaal yield good serviceable coke, well adapted to blast-furnace and foundry purposes, though unfortunately, as a rule, rather high in sulphur. Until the middle of last year the only producers were the Natal Navigation Collieries at Hatting Spruit and the South African Coke Company at Vryheid. Recently, as a result of the increased demand for coke created by the erection of blast-furnaces for the production of iron at Pretoria and Vereeniging and in Natal, the coke industry has undergone considerable expansion, and at least five other Natal companies will shortly enter the market. None of the ovens at present in operation are designed for the recovery of the valuable by-products contained in the volatile matter of coal. The shortage and consequent high price of coal-tar—for which there is a very considerable demand in South Africa—due to the embargo placed on its export from the United Kingdom, have, however, led to the formation of a company with a capital of £40,000, which proposes to undertake the production of coke, tar, ammonium sulphate and benzol at Witbank.‡ A much more ambitious project is that of the Dundee Coal Company, who intend, as soon as the requisite equipment is available, to spend £150,000 on the erection at Dundee of a large by-product recovery coking-plant. These schemes are fraught with the greatest importance to the country, because if successful they will doubtless be followed by others, since it is becoming generally realised that the coal by-product industry offers almost illimitable possibilities. It is almost certain, for example, that after the war trinitrotoluol, prepared from toluol, a coal-tar derivative, will compete with dynamite as an industrial explosive, just as benzol, another coal by-product, is at the present time successfully competing with petrol in France and Germany.

Ammonium Sulphate.—One of the most important developments that has taken place of recent years in the South African coal industry has been the erection by the Natal Ammonium, Ltd., at Mount Ngwibi, near Vryheid in Natal, of a large modern plant of the Mond type for the production of ammonium sulphate. A seam of coal, characterised by containing about 2 per cent. of nitrogen, which crops out on the slopes of Mount Ngwibi, affords the basis of the industry. At the present time the output is at the rate of about 250 tons per month, and it is hoped to increase this to 350 tons in the near future. Most of the ammonium sulphate is exported to Mauritius, very little of this valuable fertiliser being used in South Africa. The industry appears to be capable of very considerable expansion, as there are other coals in this and the adjoining districts of Natal which are equally well adapted to the manufacture of ammonium sulphate.

‡The tar production shown in the returns for 1913 came from a plant erected at Witbank some years ago. The plant proved to be badly designed and altogether unsatisfactory, and after being in operation for some time it was closed down.

(To be continued.)

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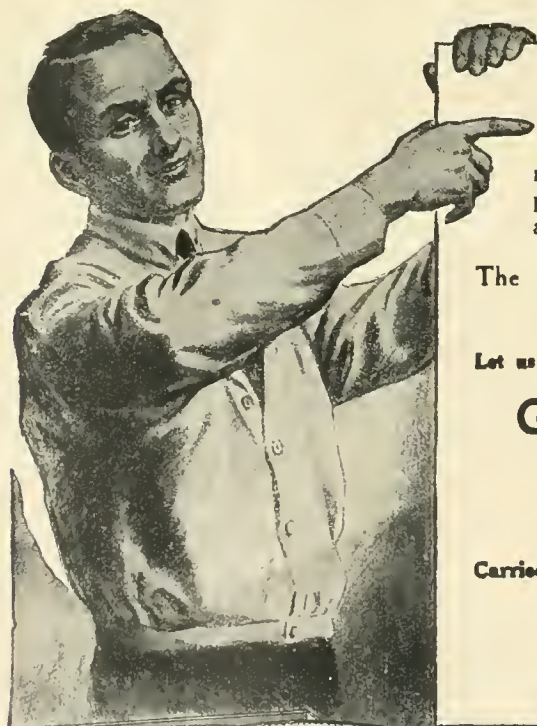
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POSITION AND PROSPECTS OF THE FERREIRA DEEP.

Outcrop to Close Down at an Early Date—Reduced Profits Anticipated.—157 Earth Tremors!

In his report on the Ferreira Deep for the year ending 30th September, 1918, Mr. Percy Cazalet, the consulting engineer, writes:—The scale of operations again shows considerable decrease on previous years; this is due to the decreasing number of available stope faces, the delays to hoisting in No. 1 incline shaft, and the poor native labour supply throughout the year. Many severe earth tremors were experienced during the year which seriously affected the No. 1 incline shaft; work on the release of pressure on this shaft was continued throughout the year, but no finality has as yet been attained, and delays to hoisting have been constant. The reorganisation of No. 2 shaft from compound to vertical winding was restarted, and the equipment of two compartments of the vertical portion completed; one surface hoist is now being used for vertical hoisting from the 7th level, and the other is still employed in compound hoisting down to the 12th level; there has been no delay or loss of tonnage due to this work. During the year the use of the Outcrop shaft was discontinued, effecting considerable saving in standing charges and releasing some material for re-use and sale; preparations are now in hand to render the remaining shaft pillars here available for stoping. The method of supporting the workings by reef packing has been continued with most successful results; 54 per cent. of the area stoped during the year was covered by packs. The total tonnage in packs, at 307,660 tons, is practically the same as that at the beginning of the year, but during the latter half a larger tonnage was withdrawn than was actually packed; this reduction will now continue for the rest of the life of the mine, owing to the decrease in the number of stope faces available. The working costs show an increase of 2s. 2d. per ton milled. The average tonnage milled monthly was 42,350 tons, as compared with 48,860 tons per month in the previous year; this reduced scale of working, together with a further increase in the cost of stores and labour, accounts for the major portion of the total increase. The increase in white wages and cost of stores owing to war conditions is found to amount to quite 3s. 5d. per ton. The yield shows a reduction of 11d. per ton milled, which is not greater than it was reasonable to anticipate in view of the rapid exhaustion of the higher grade block ground in the central and western portions of the mine. The development footage for the year amounted to 3,184 feet, the main development of the mine being now practically complete. There remains only an area at the eastern end of the mine, which has up to the present proved to be of low grade, where further prospecting work is being carried on. The payable ore developed during the year amounted to 143,700 tons of a value of 6.6 dwts., a decrease of 93,700 tons compared with the previous year, the average value being slightly higher. The ore reserves have been re-estimated as at 30th September, 1918, and are as follow:—Leader, Outcrop section, 29,200 tons, value 6.8 dwts.; Deep section, 630,200 tons, value 8.3 dwts.; South Reef, 273,000 tons, value 7.4 dwts.; total, 932,400 tons, value 8.0 dwts. These figures may be segregated as under: Immediately available, 556,600 tons, value 7.9 dwts.; temporarily unavailable, shaft and boundary pillars and isolated blocks, 375,800 tons, value 8.0 dwts.; total, 932,400 tons, value 8.0 dwts. The estimated stoping widths of the above reserves are 72 inches for the Leader and 57 inches for the South Reef, as compared with 76 inches and 61 inches respectively in last year's valuation. It will be seen that there is a decrease of 373,100 tons compared with the reserves as at 30th September, 1917; this is chiefly accounted for by the excess of ore mined from the reserves over the ore developed during the year, but is also due to the fact that the increasing costs have necessitated an increased pay limit, cutting out 39,500 tons which would have been included in normal times. The value of the reserves (8.0 dwts.) is an increase of 0.4 dwt. on the previous year, due to the lower stoping width and the increased pay limit taken. The broken ore packed in the stopes, amounting to 307,660 tons, is additional to and not included in these reserves. Owing to the decreasing number of available stope faces and the prospects of a still further

reduced native labour supply, it is necessary to anticipate a lower tonnage milled in future, and in consequence a reduced scale of profits. In view of these facts, preparations are in hand for the transfer of certain plant from the Outcrop to the Deep reduction works, with a view to the final closing down of the former at a comparatively early date.

MANAGER'S REPORT.

The manager, Mr. Paul Selby, writes, *inter alia*:—The method of supporting the stopes by means of reef packs was continued during the year with satisfactory results. The total tonnage of broken ore in packs at 30th September, 1918, was 307,660 tons, which is 3,048 tons less than at the close of the previous financial year. During the year 129,431 tons were recovered from reef packs, and a further 120,774 tons were obtained from other sources of reclamation. The above tonnages, taken together, represent practically 45 per cent. of the ore mined during the year. The systematic scraping and washing of footwalls of the stopes in the reclamation areas prior to the final abandonment was continued throughout the year in all but a few of the poorer value stopes. The work in connection with the reorganisation of the winding arrangements at No. 2 shaft was practically at a standstill during the year, but early in October of this year the timbering was changed at the bend in order to allow the two eastern skips to pass through the bend into the new vertical shaft extension. This change has resulted in a considerable saving of time on handling the shifts, and it is anticipated that the shaft pillars in the upper portion of this incline will be available for stoping at an early date. The surface accumulation of ore, amounting to 3,436 tons, was entirely used up in January last at a time when a portion of No. 1 shaft incline had collapsed. No tonnage was mined in the Outcrop section during the year under review, but development work is in progress which will render possible the mining of the remaining shaft pillars at an early date. No less than 157 earth tremors were recorded on the mine during the year. A number of these caused hoisting delays in our No. 1 (east) incline shaft. The work of stoping the reef above the incline where possible, and under it where the incline is above both reefs, has, I think, saved this shaft from complete collapse, but has not entirely overcome the difficulties resulting from earth tremors. The percentage of the tonnage mined from the poorer (eastern) section of the mine was again considerably increased over previous years, as will be seen from the following figures for the past three years:—No. 1 shaft: 1915-16, 416,823 tons, value 7.1 dwts., 56.0 per cent.; 1916-17, 411,226 tons, value 7.1 dwts., 62.7 per cent.; 1917-18, 383,096 tons, value 7.0 dwts., 68.9 per cent. No. 2 shaft: 1915-16, 327,338 tons, value 8.9 dwts., 44.0 per cent.; 1916-17, 244,382 tons, value 7.7 dwts., 37.3 per cent.; 1917-18, 173,234 tons, value 7.6 dwts., 31.1 per cent. Totals, 1915-16, 744,161 tons, value 7.8 dwts., 100.0 per cent.; 1916-17, 655,608 tons, value 7.3 dwts., 100.0 per cent.; 1917-18, 556,330 tons, value 7.2 dwts., 100.0 per cent. The development footage for the year amounted to 3,184 feet, and a similar footage is still required in order to thoroughly prospect the reefs in the poorer sections of the mine. The small footage accomplished on the pyritic footwall reef in order to expose the reef where a borehole indicated high values, has proved sufficient ore to more than justify the expense incurred in diamond drilling during the previous year. The yield per ton milled averaged 7.605 dwts., or .236 dwts. lower than for the previous year; this difference can be accounted for by the increase in the percentage of ore mined from the eastern (poorer) side of the mine, coupled with a reduction of 2.3 per cent. in the proportion of waste rock sorted. Working costs averaged 23s. 5d. per ton milled, or 2s. 2d. more than for the previous year. The average number of natives working during the year was 3,461, as compared with 3,698 for the previous year. The machinery and plant have been kept in thorough repair. Certain disused machinery and plant were sold. In this way a sum of £8,118 was realised.

THE POSITION OF THE AFRICAN AND EUROPEAN INVESTMENT CO., LTD.

Points from Annual Review of Mining and Other Interests.

VARIED and important are the interests of the African and European Investment Co., Ltd., as reviewed in the latest annual report of the company. The freehold land held by the company represents an area of 505,363 morgen (equivalent to 1,069,602 English acres), with the mineral rights over an additional 5,313 morgen (11,246 English acres). The company further owns about 61 per cent. of the capital of Bechuanaland Farms, Ltd., which holds 154,309 morgen (326,596 acres) of land in British Bechuanaland and property in Capetown.

SHARE INTERESTS.

The directors have decided to issue with the report this year a full list of the share and debenture holdings of the company. A schedule of these holdings is accordingly given, and short particulars of the assets of the various companies in which large interests are held are given below.

Vereeniging Estates, Ltd.—As will be seen from the schedule of shareholdings, the company is very largely interested in the Vereeniging Estates, Ltd. The issued capital of the Estates Company is £730,580, and it has a debenture issue of £200,000, the whole of which was, at 30th June last, held by this company. The Estates Company is the owner of 127,340 acres of freehold land on the boundaries of the Transvaal and Orange Free State, with a frontage of 25 miles to the Vaal River, and on the main trunk line of railway from Capetown to Johannesburg. It is now one of the most important centres of industry in South Africa, with its immense coalfield, the Power Station of the Victoria Falls Company, the Steel Works of the Union Steel Corporation, flour mills, brick and tile works, blast furnaces, and the other industries which have recently been established there. The Vereeniging Estates is also one of the leading coal producers in South Africa with an output of 50,000 tons per month and has other assets of great value, such as its forest of pine and oak consisting of over four million trees. The felling of this timber is to be commenced this year, and as the whole forest stands in the books at a cost of under £60,000, the sale of the timber should produce a large and steadily increasing revenue to the Estates Company. The profit outlook of the company is now so satisfactory that it should be in a position to resume the payments of dividends next year.

East Rand Mining Estates, Ltd.—Another important holding of the company is in the East Rand Mining Estates. This company has an issued capital of £450,000, with no liabilities, and possesses 22,785 acres of freehold land, practically all of which is situated in the gold basin of the Far East Rand. Boreholes have proved the existence of the Van Ryn Reef over the whole of its farm Grootvlei, adjoining Springs, and over a large portion of Palmietkuil, and developments on neighbouring farms have shown the farm Vlakfontein to be within the gold area. A large coalfield has also been proved on Grootvlei, an agreement having recently been concluded for the sale of these coal rights to a new company which has been formed to develop and work the coal mine.

East Rand Extension Gold Mining Company, Ltd.—This company owns a block of 194 claims on Farm Leeuwoort (East Rand) and various other claim holdings, buildings, and share interests. All operations on its property in the East Rand were suspended some years ago owing to the inability of its board to raise the funds required for the purchase and erection of a treatment plant. Two shafts were sunk, and considerable development carried out in the mine, the tonnage developed being estimated at 226,055 tons of a value of 6.28 dwts. The mine is still closed pending the provision of further working capital.

Rhodesia Gold Mining and Investment Company, Ltd.—This company has a capital of £300,000 (in which your company holds a 40 per cent. interest) and has no liabilities. It has large shareholdings in the Lonely Reef and Cam and

Motor Gold Mining Companies, as well as smaller interests in other Rhodesian companies. It also owns practically the whole share capital of the Sabi Gold Mining Company, whose mine is let on tribute, a producing gold mine (the Bernheim), which also is let on tribute, and another mine (the Huntsman) which has been recently acquired and which has been developed by the company down to the third level. The tonnage developed in the three levels so far opened up in this mine is estimated at 8,700 tons of an assay value of 19 dwts., and the consulting engineer considers the prospects of the mine at depth are very promising. A new main shaft is being sunk to open up the fourth and lower levels, and a reduction plant is being erected to treat the ore.

Lonely Reef Gold Mining Company, Ltd.—In addition to its interests held through the Rhodesia Gold Mining and Investment Company, the company has a direct share interest in the Lonely Reef Gold Mining Company. Developments during the past year have given most satisfactory results, high grade ore having been consistently opened up throughout the 19th, 20th and 21st levels. The ore reserve at 30th September last were estimated at 198,585 tons of an assay value of 20.64 dwts., sufficient to supply the mill for a period of over three years. Its profits are at the rate of about £9,000 per month on a capital of £271,000, and it is paying dividends at the rate of 30 per cent. per annum.

Crown Diamond Mining and Exploration Company, Ltd.—Mining operations on this property were suspended some years ago owing to the disappointing results obtained and the inability of the company to profitably work the yellow ground by surface operations, but in view of the existing high price of diamonds the board have recently tested the mine at depth by means of boreholes and blue ground of an apparently high quality is reported to have been struck at about 250 feet. A contract has been entered into for dewatering the mine and sinking a shaft to the blue ground, and this work has now been started.

Swaziland Corporation, Ltd.—This company, with an issued capital of £200,000, possesses mining rights in Swaziland covering an area of 410,000 acres, and freehold land 48,000 acres in extent. All work on the mining areas has been stopped, and it is proposed to let the mines on tribute.

South African Breweries, Ltd.—Your company has for many years held a substantial interest in the South African Breweries, which is one of the oldest-established and best-managed industrial businesses in South Africa. This company continues to make very satisfactory profits notwithstanding the increasing cost of its raw material, and that practically no increase has been made in the selling price of its products, the improvement in its position being entirely due to its larger turn-over and economies effected in working. The dividends paid on the ordinary shares during the last financial year amounted to 2s. 3d. per share, the final dividend of 1s. 3d. per share being declared free of income tax. The financial position of the company is very strong, and your directors consider this investment a thoroughly sound one with improving prospects.

Union Steel Corporation (of South Africa), Ltd.—The interest acquired in this undertaking promises to be a very profitable one. The business was established at Vereeniging prior to the war, and although at first great difficulties—inseparable from the establishment of a new industry—were met with and serious losses were incurred, these difficulties have now been overcome and very satisfactory profits are being earned. The company is supplying the South African Government and the mines of the Rand with a considerable proportion of their iron and steel requirements, and the business has now reached a stage when it can be regarded as one of the permanently established industries of the Transvaal.

THE GOLD OUTPUT FOR 1918.—£35,768,688.

A Decrease of £2,555,233—December Worst Month Since 1914—Detailed Returns.

DURING the past year the Transvaal gold mines produced 8,420,659 fine ozs. of gold, valued at £35,768,688, as compared with 9,022,212 fine ozs., valued at £38,323,921, produced in 1917. The decrease of 601,553 fine ozs., valued at £2,555,233, is mainly due to floods, the native labour shortage resulting from the influenza epidemic, and the closing down of certain mines. In 1918 the Witwatersrand produced 8,198,029 ozs., valued at £34,823,017, and the outside districts 222,630 ozs., valued at £945,671. The monthly returns for 1918 are as follow:—

	Ozs.	Value.
January	714,182	£3,033,653
February	659,759	2,802,477
March	696,281	2,957,614
April	717,099	3,046,045
May	741,317	3,148,915
June	727,696	3,091,058
July	736,199	3,127,174
August	740,210	3,144,211
September	708,206	3,008,267
October	679,764	2,887,455
November	658,701	2,797,983
December	641,245	2,723,836

Following are the grand totals for the past sixteen years:—

	Ozs.	Value.
1903	2,955,749	£12,589,248
1904	3,779,621	16,054,809
1905	4,897,221	20,802,074
1906	5,786,617	24,579,987
1907	6,451,384	27,403,738
1908	7,052,617	29,957,610
1909	7,280,545	30,925,788
1910	7,533,843	32,001,735
1911	8,237,723	34,991,620
1912	9,124,299	38,757,560
1913	8,794,824	37,358,040
1914	8,378,139	35,588,075
1915	9,093,671	38,627,461
1916	9,295,538	39,484,934
1917	9,022,212	38,323,921
1918	8,420,659	35,768,688

DECEMBER OUTPUT.

During the past month 641,245 fine ozs. of gold was produced, as compared with 658,701 ozs. in November, a decrease of 17,456 ozs. The official figures for the Witwatersrand and the outside districts are:—

WITWATERSRAND.

	Ozs.	Value.
November	640,797	£2,721,932
December	630,505	2,678,217
Decrease	10,292	43,715

OUTSIDE DISTRICTS.

November	17,904	76,051
December	10,740	45,619
Decrease	7,164	30,432

GRAND TOTAL.

November	658,701	2,797,983
December	641,245	2,723,836
Decrease	17,456	74,147

Last month's grand total is the lowest since February, 1914. There were 8,454 stamps in operation in December, as against 8,704 in November, while the labour returns show that the number of natives employed on the gold mines last month was 7,669 less than in November. The Glencairn mine made no return for December. Among the decreases recorded for the past month are the following: Randfontein Central, £18,995; Government Areas, £15,436; Bantjes, £12,815; New Modderfontein, £8,280; Simmer and Jack, £6,431; East Rand Proprietary Mines, £4,834; New Kleinfontein, £4,648; Knights Deep, £4,248; Springs Mines, 4,235. The following are the principal increases: Village Deep, £12,089; Simmer Deep, £7,960; Crown Mines, £6,759; Brakpan Mines, £4,545; Jupiter, £4,120; Modderfontein B., £3,968; Consolidated Main Reef, £2,451; City Deep, £2,396; Wolhuter, £2,184; Witwatersrand, £2,000.

STAMP POSITION.

In December there were 8,454 stamps at work on the Transvaal goldfields, as against 8,704 in November, a decrease of 250. The official figures are as follow:—

	Rand.	Outside.	Total.
November	8,464	240	8,704
December	8,274	180	8,454
Decrease	190	60	250

LABOUR FIGURES.

The native labour figures for the past three months are as follow:—

	October.	November.	December.
On gold mines	173,153	160,275	152,606
On coal mines	11,824	11,826	11,851
On diamond mines	4,749	4,016	3,180
	189,726	176,117	167,637



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INDIVIDUAL RETURNS.							
	Value.	Increase.	Decrease.		Value.	Increase.	Decrease.
Aurora West	£10,789	—	£1,835	Robinson Deep	£54,749	£55	—
Bantjes Consolidated ...	12,909	—	12,815	Roodepoort United	22,589	314	—
Brakpan Mines	85,052	£4,545	—	Rose Deep	51,487	—	£2,336
City and Suburban	31,624	—	1,789	Simmer and Jack	49,554	—	6,431
City Deep	91,127	2,396	—	Simmer Deep	48,420	7,960	—
Cons. Langlaagte	47,587	—	319	Springs Mines	68,108	—	4,235
Cons. Main Reef	65,436	2,451	—	Van Ryn Estate	32,550	—	1,266
Crown Mines	195,379	6,759	—	Van Ryn Deep	94,389	—	543
Durban Roodepoort	1,024	1,024	—	Village Main Reef	25,877	—	671
Durban Deep	38,969	570	—	Village Deep	65,139	12,089	—
East Rand Proprietary ...	137,792	—	4,838	Witwatersrand	37,851	2,000	—
Ferreira Deep	57,259	—	1,993	West Rand Consolidated...	32,117	5,123	—
Geduld Proprietary	62,471	1,677	—	Wit. Deep	32,644	1,190	—
Geldenhuis Deep	55,679	701	—	Wolhuter	37,308	2,184	—
Ginsberg	12,790	191	—	Miscellaneous	3,690	—	5,664
Glencain	—	—	9,885	OUTSIDE DISTRICTS.			
Government Areas	171,838	—	15,436	Sub Nigel	25,746	—	603
Jupiter	28,961	4,120	—	Barrett	989	46	—
Knight Central	27,355	233	—	Glynn's Lydenburg	2,239	1,143	—
Knights Deep	61,324	—	4,248	T.G.M.E.	4,915	1,840	—
Langlaagte Estate	54,783	—	1,508	Do. (Oct.)	—	—	25,482
Luipaardsvlei	20,122	1,160	—	Miscellaneous	11,730	—	7,376
Meyer and Charlton	39,763	—	535	GROUP PROFITS.			
Modder B.	113,423	3,968	—		October.	November.	December.
Modder Deep	84,577	485	—	Central Mining	£252,873	£210,865	£237,879
New Goch	13,045	—	102	Barnato	170,688	159,347	139,290
New Heriot	16,439	807	—	Gold Fields	*4,126	*2,621	9,316
New Kleinfontein	57,569	—	4,648	General Mining	17,992	17,266	20,291
New Modder	159,370	—	8,280	Mines Selection	49,472	53,498	56,639
New Primrose	15,993	638	—	Union Corporation	63,666	62,232	63,419
New Unified	12,165	365	—				
Nourse Mines	44,852	—	939				
Princess Estate	21,668	1,092	—	Totals	£554,691	£503,208	£526,834
Randfontein Central	128,363	—	18,995		* Loss.		
Robinson	42,248	1,499	—				



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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

No Consuming Market—British Trade Commissioner—Fifty Millions South African Manufactures—Shipping—Trend of Business—White Lead—Timber and Property.

THERE is no consuming market at the present time as the mines are experiencing a cessation as between the chief buying office dropping out of existence and the buying reverting to the pre-war plan of each group or mine catering for itself. And again there has been an extra careful stock-taking in connection with the allotment of charges against the several groups from the chief buying office. From July 1st, 1917, to December 31st, 1918, that office dealt with approximately £3,750,000 worth of stores. The establishment expenses for such will, it is understood, be borne by the various groups *pro rata* to the dealings. Just one illustration will give an excellent idea of what the pooling scheme accomplished. For example, during the year ending June 30th, 1918, some 3,300 tons of wire ropes were dealt with or negotiated. Out of this quantity only 1,300 tons had to be imported from overseas, and the balance of 2,000 tons was drawn from pooled stocks and from the extra accumulated surplus at the mines and distributed to the mines requiring them. This resulted in a saving, roughly speaking, of 2,000 extra (beyond the 1,300 tons) coming from overseas, when shipping was so acutely scarce.

BRITISH TRADE COMMISSIONER, SHIPPING, ETC.

The British Trade Commissioner has returned and will have his head offices on the Rand. According to several published interviews, he has a lot of knowledge, and so far he is giving both sides of the question, viz., the British and the South African, which by the way are not always in

harmony and reciprocal. The subject at the moment is very appropriate, as our members of Parliament are on the eve of considering many trade subjects—or should be. A noteworthy remark was that the people in England had been much impressed by the news that in the year ending June, 1917, the value of South Africa's manufactures had been in the neighbourhood of fifty millions. Now what all good South Africans must desire is to increase that fifty millions' output and not have it swamped by frenzied overseas competition, from whatever source it may come. This is said in no carping spirit. Another pertinent remark was that everything naturally hinged upon the shipping facilities, and it was emphasised that these would improve almost weekly. This latter statement is supported by Sir Joseph Maclay, Minister of Shipping, who said the termination of hostilities had eased enormously the shipping position, and the tonnage available for bringing imports to the United Kingdom was increased by the equivalent of ten million tons of goods yearly. It would shortly be possible to release substantially tonnage from Government requisition, thereby creating a free market in tonnage and freight.

These increased shipping facilities will very much assist the export of raw materials from South Africa, which in all fairness to the British Trade Commissioner, he is anxious to obtain from this country. He also spoke well of our cheese, eggs, meat and foodstuffs generally. And to assist

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our manufacturers he was sending out a bale of skins of different types, nearly all mimosa-tanned, as could be so well done in South Africa, as there is a big market in England for basils or tanned sheepskins for use in harness-making and upholstery as well as for boots and shoes.

Other information is that the Washington Shipping Board has announced reductions of from 25 to 30 per cent. on freight rates from Atlantic ports to Asia, Japan, Australia and Africa, to be effective from January and February loadings.

TREND OF BUSINESS.

Whilst business in the mining material trade is on the lean side, yet confidence is being restored. A second-hand material merchant said that at the armistice his goods went down twenty-five and even more per cent., but since then they have steadied at, say, the twenty-five per cent. reduction. He thinks that there will not be another such reduction and in some things even a betterment will obtain on decent machinery, that is when one has just the thing wanted by a customer. Undoubtedly there are signs of general steadiness on the basis of present prices for the next month or so, subject to untoward arrivals of lines from America and elsewhere. For example, in the case of the Government motor car sale on Wednesday prices were remarkably good, practically some twenty per cent. more than the man in the street anticipated. But this being the first sale and well advertised, it brought people from long distances, therefore the prices realised were not surprising. Perhaps the weakest point about business is the absence of enterprise and speculation, for although merchants will purchase actual requirements there is no desire to obtain things for speculative or stock purposes.

OILS, COLOURS, WHITE LEAD, ETC.

The white lead position is under a cloud, as no less than 5,000 kegs have just been received at the coast from America, which is estimated to last the country five months. The price is 1s. per lb ordinary, but 90s. from merchant to merchant. Linseed oil, raw, is 14s. 6d., and boiled 15s. imperial gallon. Cape nut oil, 77s. 6d. to 82s. 6d. gallon. Olive oil, 24s. to 27s. 6d. gallon. Castor oil, 72s. 6d. to 75s. Turpentine the same price as last. Carbolineum, which always came from Central Europe, is now being made in Britain and exported. The latest American cables state that turpentine is rapidly rising, as stocks are very scarce. Glue is firm at the lower level of values of 1s. 4d. to 1s. 10d. per lb, although some can be had at 1s. Through the effects of speculation, it is estimated that South Africa has sufficient glue to last another twelve months, therefore our prices are similar to those ruling in New York. There is said to be a superabundance of cotton waste in town at prices varying from 9d. to 1s. 3d., according to quality.

TIMBER AND PROPERTY.

It is said that quite fair quantities of timber logs, such as oregon and pitch pine, have been received at the coast from America for merchants under contract for the mines here. This is a little disconcerting for the timber dealers, as they had an idea that with the dissolution of the chief buying office the mines would again soon fall into line as their customers. Deals are 1s. 9d. to 1s. 10d.; floorings, 10½d. to 10¾d.; and ceilings, 6½d. to 6¾d. per foot. Galvanised roofing iron, 1s. 9d. to 1s. 10d. per foot, 24 gauge. It is said that lower quotations are available, mostly for odd lengths or the 26 gauge. Although business is quiet, but not so quiet as last month, yet great hopes are entertained that the building trade in town is waking up again. There was a decided lull in properties after the armistice, and maybe prices had the tendency to go lower, but there is certainly a more robust feeling, presumably because the demand for houses is greater than ever. Second-hand deals are 1s. 2d. and the standard sized roofing iron 1s. 1d. per foot.

IRON AND STEEL.

Business is exceptionally quiet in bar iron and mild steel. Values remain the same throughout the gamut of sizes. There may be a disturbing element in the fact that fair quantities of bar iron of the smaller sizes are on the way from America. New galvanised iron piping at a second-hand warehouse were on offer, cheaper than the landed cost on to-day's oversea prices, viz., ½ in., 6d.; ¾ in., 8d.; and 1 in., 1s. per foot. The price of wire nails is on the easier side, but very erratic, as two travellers are hardly alike in their quotations.

GLEANNINGS.

Nitrate of lead has receded from £57½ to £55½ per ton of South African make. Carbide is about 85s. to 90s. per 100 lbs., with an easier tendency through expecting shipments from Canada. Dealers in belting are chary about expressing an opinion as to the immediate future. There has been no alteration in electrical materials and buyers remain in an expectant mood for reductions, but well-informed dealers do not expect much alteration in present rates until about July next. There may be two proposed new cement companies asking for capital in the Johannesburg money market.

Spitzkop Farm Gold.

For the year to June 30 last the ore crushed by the tributers, the G.H.L. Syndicate, was 15,003 tons, giving an estimated yield of £11,439, equal to 15s. 3d. per ton. The company's royalty amounted to £1,416. The total royalty for the year shows a reduction of £154 as compared with the previous year, partly owing to the lower grade of ore treated. These figures are subject to adjustment on receipt of final account sales. The revenue account shows a net debit balance of £403, after charging concession dues, prospecting and other expenses in South Africa and London. Prospecting operations on the Springhill section of the property, which adjoins the Leader Hill mine at present let to the tributers, consist of 455 feet of driving at an expenditure of £796. The hardness of the ground has retarded progress, but softer ground is looked for soon. The driving has been on reef from 4 to 16 inches thick. The assays have varied very much and no estimate of its value can be formed until the reef is further developed. When the softer ground is reached it is expected that the values will improve and become more regular, as has been the experience in the same reef in the adjoining area, where better results were obtained in the soft than in the hard ground.

THE CASSEL COAL CO., LTD.,

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-first Ordinary General Meeting of Shareholders in the above Company will be held on **Tuesday, the 25th day of March, 1919**, at 11.15 a.m., in the Board Room, Lace Building, Johannesburg, for the following purposes:—

1. To receive and consider the Balance Sheet, Profit and Loss Accounts, and Directors' and Auditors' Reports for the year ended 31st December, 1918.
2. To elect two Directors in place of Messrs. J. Dale Lace and W. J. Gau, who retire in rotation, but, being eligible, offer themselves for re-election.
3. To appoint Auditors for the ensuing year, and to fix the remuneration of the Auditors for their past services.
4. General Business.

The Transfer Books of the Company will be closed from the 18th to the 25th March, 1919, both days inclusive.

By Order of the Board,

T. L. DAY, Secretary.

Lace Buildings, 74, Fox Street,
Johannesburg, 14th January, 1919.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

A Great Engineering Project: Reclaiming Lakes N'Gami and Makari-Kari.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—From the sub-titles of your publication I imagine your columns are open to writers on engineering and industrial schemes, provided the subjects are considered of interest to your readers. I venture to state that, if the Union Government can be persuaded to think that it comes within its province to spend a fairly moderate amount on carrying out the proposal suggested by Professor Schwartz, viz., to reclaim the Kalahari Lakes, then there would be hundreds of thousands of acres of land—now useless waste ground—capable of being put under irrigation. This would open up the possibilities of great engineering works, land settlements, industrial undertakings, and give employment to thousands, if not hundreds of thousands, of white people. No man can say with any certainty what would be the effect on our climatic conditions in South Africa, or the recently conquered territory in South-West Africa, if these great lakes were reclaimed. The whole thing is, of course, quite problematical and one opinion is as good as another. Personally, I conscientiously believe if we could get great sheets of water where we now have great planes of hot sand that our climate would be improved, our fountains in years to come would probably be strengthened, and our rainfall would be greater. There is bound to be some benefit to the Karoo farms, as Lake Makari-Kari had an overflow right down to the Orange River through the South Kalahari. I remember quite forty years back meeting an extremely intelligent old man of about 85 to 90 years of age. This old fellow told me then that quite sixty years previous to our conversation (*i.e.*, 100 years from this date) he had gone with some Dutch hunters and "trekkers" through the Karoo and up to possibly Lake N'Gami. He described the country as fertile and green, teeming with game and lots of waters in the rivers which are now dry. He also thought that there was less rain (at the time of our conversation) than there was 60 years previous. Personally, I am of opinion that the rainfall is less now than it was fifty years ago. From evidence obtainable we are told that Lakes N'Gami and Makari-Kari are now only small swamps of about three or four miles across. We are also told by elderly men that they can remember when there was quite a large number of inhabitants living in the vicinity, possessing thousands of head of cattle, and quite a number of traders. To-day the places are deserted. Professor Schwartz and others who have visited the old lakes assure us that there are large parts of excellent pasturage in what is erroneously called the Kalahari desert—it is certainly not all desert. The question to be considered is this: Can we accomplish in the Kalahari what has been done in Egypt, and construct a second Assouan Dam by filling the lost lakes? How much would it cost to divert the rivers into their old channels? How many great reservoirs would it be necessary to construct for storage in order that ten or more millions of acres might be irrigated for the benefit of one or more millions of white people? Is it not worth serious consideration? It is up to the Union Government to send their engineers to visit the sites along with Professor Schwartz and get first-hand information for themselves. It certainly cannot be an Imperial Government undertaking. I have no doubt great canals would have to be cut through the swamps to save evaporation. Three or four rivers would have to be dammed and employment given to thousands of white men. You state, sir, in your last issue, that you hope, in the near future, to publish a series of articles on this subject by Professor Schwartz. May I suggest that the Professor deals with it

very carefully from an engineering point of view? Let us know how many rivers will have to be dammed, and the cost; how many canals to be cut and storage reservoirs to be constructed, giving estimate of cost and number of men to be employed; about how many millions of acres could be irrigated; and approximately the number of white people they would carry. Could the water be taken to Bulawayo, Kimberley, or other towns, and the cost, etc.?—Yours, etc.,

M. H. D. HOWES.

Godwan River,
Eastern Transvaal.

Insizwa Nickel, Copper, and Cobalt Developing and Mining Co., Ltd.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—My attention has been drawn to a reference in your Notes and News contained in your issue of the 4th instant intimating that you had received several letters from shareholders of this company complaining that they are unable to obtain information regarding the proceedings at annual general meetings of the company or the names of its directors other than the chairman. As far as I can recollect only one complaint regarding the non-publication of proceedings at the company's annual general meetings has ever been received by me. No request has ever been submitted to me for the names of the directors on the Board. The only change made in the directorate since the annual general meeting of the company held in 1917 was the substitution of Mr. John Taylor, of Mount Ayliff, in the place of the late Mr. A. K. Green, killed on active service. I may mention that a confidential circular was sent to all registered shareholders at the end of November last dealing with the company's prospects.—Yours, etc.,

FRED S. BERNING,

Secretary.

Kokstad, East Griqualand,
7th January, 1919.

[Perhaps the above will satisfy the shareholders who wrote to us in regard to the company.—Ed., *S.A.M.J.*]

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

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Engineering Notes and News.

REPORT ON ECONOMIES IN MINING ENGINEERING SUPPLIES.

Points from Statement Prepared by Mr. W. Elsdon Dew.

DURING the year 1916, the tightening up of restrictions in England on the export of supplies for the mines made it imperative that concerted action should be taken regarding economies to be practised on the mines and, where possible, have substitutes for imported articles made locally. Previous to that year the large local stocks of necessary engineering supplies had not made the matter so urgent, but certain economies and useful ideas were being developed on individual mines, and it was evident that, providing a free circulation of this information could be accomplished, the mines of the group would be greatly benefited. Many interesting and unique devices in connection with machinery on mines were evolved by various engineers, and it was felt desirable to summarise the many economies which had been effected. The following is a list of the principal items:—

MILL PARTS.

1. *Stems*.—Stems are made on many mines from old cam-shafts or by faggoting up three old stems, at a cost averaging about £3. Stems are also repaired by welding on any suitable scrap material. Many mines report that one or other of these ideas has long been practised.

2. *Cams*.—New Modderfontein: Worn cams are brought up to shape by welding on pieces of rail or drill steel, at a cost of about £2 10s. per cam. The Knight Central fuller up the cams and, when necessary, weld in a piece of drill steel. The cost is stated to be £1 per cam. Many mines are putting this process into practice. Ferreira Deep, Ltd., draw out old worn cams from root to standard size; in practice prior to war. Crown Mines, Ltd., have made up a few by quasi-are; first results not good, could be improved.

3. *Heads*.—Ferreira Deep, Ltd.: When badly worn in socket are heated up, compressed, re-bored, and put again into commission.

4. *Shoes*.—Several methods are being tried for replacing broken shanks on shoes. New Modderfontein weld a worn-out shoe on to the broken one. This is economical if the weld holds, but definite information on this point is not yet available. A more useful method is to draw a new shank out of the shoe under hammer, which makes a satisfactory job, not, however, invariably successful, variation in quality of steel sometimes causing the shoe to split. It is stated two hours are required to form a new shank like this, so the cost would be about 10s. Rose Deep bore out shoe and shrink in a mild steel shank at a cost of about £1. Another mine converts old tappets into shoes by welding on a shank.

5. *Dies*.—It is now general practice to make dies by cutting an old head in two and filling holes with shoe shanks. This costs about 15s. for two dies.

6. *Cam Shafts*.—Witwatersrand Deep, Ltd., make cam shafts of five stems faggoted up together. Other mines weld up broken shafts, with varying success.

7. *Blanton Gibs*.—Crown Mines, Ltd., has found a gib with feather on key much superior to the gib with two pins. The holes for pins are frequently drilled too deep and become a source of weakness in cam shafts. The keyway would appear to add 50 per cent. to life of cam shafts. Ferreira Deep, Ltd.: All pin-holes in cam shafts are drilled in fitting shop to gauge $\frac{1}{4}$ in. deep, by using flat-faced drill with sleeve on to prevent possibility of drilling too deep, therefore consider cutting key-ways and fitting key an unwarranted expense.

8. *Mortar Box Liners*.—At the Crown Mines, Ltd., mortar box liners are made from old cam shafts at a cost 50 per cent. under imported ones. Similar liners are being made on some of the mines from old dies.

9. *Wood Guides*.—In connection with the practice of re-boring wood stem guides, the Knight Central, Ltd., find it pays to buy extra thick timber for the outside guides. In this mill the inside guide against the girt cannot be more than 4 in. thick, but the outer one can be $4\frac{1}{2}$ in. This extra $\frac{1}{2}$ in. gives a much longer life to half the guides. Ferreira Deep, Ltd.: Practice on mine to start guide with $\frac{3}{4}$ in. liner between halves, and as holes wear the liner is reduced until they come face to face. $\frac{3}{4}$ in. is then cut away from the face of each half of guide block and restarted with a $\frac{3}{4}$ in. liner. Same procedure carried out until blocks are completely worn out; any odd hole worn out of proportion is lined with raw hide liner. By this method get an average life of seven years. Other mines adopt similar methods for economies in guide blocks. Crown Mines, Ltd.: Reduced our bill by lining guides with discarded leather ("Hendry") belting. Leather lining is not a new idea, but tacking on strips is novel, having advantage of enabling shape of box to be maintained. Still further improved by battery screening.

10. *Boilers*.—An interesting boiler repair job, which saved the company an expenditure of £300 on the boiler tubes, was carried out at the New Heriot Gold Mining Co., Ltd. Through removal for cleaning, the tubes of an F. & C. boiler, 104 in number, had worn out at the ends. By cutting 2 in. off each end of these tubes and 4 in. off the boiler shell, all these tubes could be used again. The whole job cost £60. East Rand Proprietary Mines, Ltd.: Method new to mine, but do not approve. It is practice to cut and weld tubes to suit the boiler and consider this better method. Welding tubes in practice on mine since war started. Crown Mines, Ltd.: Shortening of boilers has been in practice with Sterling boilers in order to make further use of tubes, also being done to facilitate transport.

11. *Bye-Pass Valve*.—A bye-pass valve for Sulzer pumps is made by Mr. Hird, Durban Roodepoort Deep, Ltd., which eliminates the wasting of the whole of the valve easing when the seats are grooved. The seating and valve can be renewed without breaking any joints except the top cover, and can be changed with valve in position. Robinson Gold Mining Co., Ltd.: Designed one last year of simple type—doing well. Suggest making seat removable in way to save bringing to shops. Then alter dimension a little so valve could be renewed by taking off cover only. Knight Central, Ltd.: Great economy has been effected by placing a worn valve outside the good bye-pass valve by closing the worn valve first. This has the effect of balancing the pressure when closing the inner valve. The life of valves is greatly prolonged for the cutting effect of water under pressure is greatly reduced.

12. *Charging Sticks*.—East Rand Proprietary Mines, Ltd.—Have locally made machine of revolving tube carrying two cutter blades. Sticks squared and passed through centralising guide slot on to cutter blades, etc. Operation both simple and efficient. Is a valuable economy. Have made charging sticks by machine before the war.

13. *Crushers*.—Bantjes Consolidated Mines, Ltd.: Carried out an economical repair job on a 30 in. x 12 in. Hadfield crusher. The engineer made a pair of case-hardened toggles from cam shaft at a cost for labour of £3 5s., which allows an ample margin for power costs, etc., compared with the imported price of £9 10s. From similar material a wedge block toggle seat for 30 in. x 12 in. Hadfield crusher has been made. Ferreira Deep, Ltd.: F. & C. or Hadfield's 10 in. x 20 in. and 12 in. x 30 in. All toggles when worn badly reformed cost of 8s. each. Broken toggle blocks replated by M.S. ones made on mine, also back

wedges for fixed jaw faces. East Rand Proprietary Mines, Ltd.: Have made wedge blocks and toggle seats from this material. Making crusher parts from old cam shafts or suitable scrap valuable economy.

14. *Drill Steel*.—There is great activity in the collection of old drill steel from surface and underground workings, and the quantity forthcoming is remarkable. All this odd steel is welded up and the economy effected is reflected in the greatly diminished call for new steel. Village Main Reef G.M. Co., Ltd., have done very good work in making drill steel from scrap. Witwatersrand Deep, Ltd.: Method of faggotting up odd bits of steel to make drills is, I believe, novel and certainly excellent. Ferreira Deep, Ltd., has done well with scarfing and finishing tools. City and Suburban G.M. Co., Ltd., has been welding old hand steel and hollow steel in Tregaskis furnace with good result.

15. *Welding Steel*.—Considerable variation in practice obtains on the mines in regard to welding. Some smiths adopt scarfing in varying degrees, others lap welding, others again are trying the butt weld. Bantjes Consolidated Mines, Ltd., scarf and weld all machine and hand-drill steel. Hand-drill steel welded under rock-drill hammer. Machine-drill steel welded under steam hammer.

16. *Welding Drill Steel*.—The Ferreira Deep, Ltd., has devised the method of scarfing steel in Leyner sharpener. By this method it is stated one man can scarf 2,000 pieces per shift as against about 200 using the anvil. The welding up is done under a rock drill hammer, the anvil having a V groove to keep steel in place. It is believed that 300 welds of solid steel can be done per shift. There is the Holman machine for removing any burr on hand-drills after sharpening. When the drill is thrust against dolly, air is automatically turned on into operating cylinder.

17. *Welding Hollow Steel*.—Several methods are in vogue for welding hollow steel. It is difficult to say which is the best. The six point dolly for scarfing is perhaps that most likely to secure a strong weld. East Rand Proprietary Mines, Ltd., weld hollow steel and use scarf weld for "Leyner" steel and Basket welding for "Hydromax," "Atlas," and other similar machine steel. Best type of weld is matter of opinion.

18. *Making Drill Steel*.—The Village Main Reef G.M. Co., Ltd., have been very successful with $\frac{3}{8}$ in. hand steel made from shoe shanks. The shank is punched out of the shoe, heated and drawn out under hammer. One smith can make from 200 lbs. to 210 lbs. of steel per shift, costing 3d. per lb. and about 2 tons of this steel is used per month on the Village Main Reef. In tempering only $\frac{1}{8}$ in. to $\frac{1}{4}$ in. of the drill tip is put into water which is kept at about 200°. Mine water was found to affect tempering, and water for this purpose is collected from steam traps. The appearance of this steel makes it easy to sort out from steel requiring different tempering. City Deep, Ltd., have made drill steel from wire rope, giving the cost at 3d. per lb. At date this has not been extensively used on the mine, and further results are awaited. Ferreira Deep, Ltd., have made $\frac{7}{8}$ in. drill steel from old grizzly bars, at a cost of about 2d. per lb. It is stated that this steel tempers very well. Witwatersrand Deep, Ltd., is making drills by faggotting odd bits of drill steel from 3 in. to 6 in. long.

19. *Shanking Jack Hammer Steel*.—City and Suburban G.M. Co., Ltd., have devised an excellent machine for shanking hollow Jack hammer steel. This consists of a spindle on which are mounted two 12 in. diameter hardened steel cutters, kept apart by a distance piece, and having teeth cut on the inner faces with a bull-nosed chisel. The discs revolve at 1,000 to 1,500 revolutions per minute, and the steel to be squared is heated and thrust between them. The width of distance piece between discs determines the size of square cut on steel, and the diameter of the distance piece relative to 12 in. cutters, determines the length of square, the distance piece forming a stop for the steel. Two men and four natives with use of furnace, hot mill and

Leyner sharpener do 200 shanks in eight hours. Cost per shank, about 5d. Rose Deep, Ltd.: Suggestion is new one, but our present system of jumping these shanks appears to be much more economical. East Rand Proprietary Mines, Ltd.: End is heated and punch put in the hole. End drawn up to gauge under hammer, dressed and tempered. For Leyner drill steel have a machine. Any successful method of shanking by machine better than drawing down under hammer.

20. *Shanking 1 in. Hexagon Steel*.—Langlaagte Deep has a good method of shanking 1 in. hollow hexagon steel, which unless squared is apt to slip round in the rock drill chuck. The steel is jumped up inside a jig to $1\frac{1}{2}$ in. diameter and then squared to 1 1-16 in. in the Leyner sharpener. While squaring air and water are blown through the steel which prevents the hole in steel closing up. East Rand Proprietary Mines, Ltd.: For 1 in. steel practice to jump or stave up the end. End then drawn down to gauge and finished off similar to Jack hammer. Any successful method of shanking by machine superior to drawing down under hammer.

21. *Flanges*.—Excellent flanges drop-forged in one heat are being made by the Wolluter Gold Mines, Ltd., of scrap plate, in all sizes up to 12 in. bore. The heated plate of the required flange diameter, with the hole in centre proportioned to the depth of flange collar required, for screwing or rivetting, is placed on a die and dolly driven into the centre under hammer.

22. *Furnaces*.—The necessity for a good soaking heat in working up scrap led to the engineer of the City and Suburban G.M. Co., Ltd., designing a furnace. Apart from its utility in the work of renewing such things as battery parts and truck wheels, the engineer finds it pays him, with this furnace, to faggot up scrap and make flat iron. The pre-war price for flat iron ranged about 14s. per 100 lbs.; to-day's price is 62s.; the City and Suburban G.M. Co., Ltd., costs are 25s. per 100 lbs. for odd lots specially made, and 16s. for a whole shift output at piece work rates. With this furnace $1\frac{1}{4}$ in. copper bars for electrical purposes are run out of scrap. Two days' run on faggotted scrap gave cost as 8s. a cwt.; for 3 to 4 in. blooms weighing 100-160 lbs. Scrap charged at 1s. 6d. a cwt. and use of hammer 32s. for two days. This furnace has been adopted on many mines with beneficial results. It is undoubtedly of great use wherever there is a large hammer.

(To be continued.)

New United Reefs (Sheba) report for the year ended May 31 states that an agreement has been entered into with a tributor for working 35 of the Desiré claims at Pilgrims Rest who is engaged in prospecting operations.

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Company Meetings.

VAN RYN GOLD MINES ESTATE, LTD.

The 23rd ordinary general meeting of the Van Ryn Gold Mines Estate, Ltd., was held at Winchester House, Old Broad Street, London, E.C.2, on Wednesday, December 11, 1918. Mr. L. B. Burns (chairman of the company) presided. Mr. T. Fredk. Thorne (secretary) read the notice of meeting and the report of the auditors.

ABNORMAL CONDITIONS.

The Chairman, who was cordially received, said: Gentlemen, I think on this the first occasion of my meeting you as chairman of the company, it is fitting, before we pass to the ordinary business of the meeting, that I should say a word or two as to the change that has taken place. You will have seen in our report that Mr. Gillam has been impelled to resign the chairmanship, although happily he retains his seat on the Board. Mr. Gillam has been, as you know, chairman for nearly 27 years, and whilst the regret that the Board feel at his retirement is to some extent modified by the fact that he still remains our colleague, we still feel very sorry for the step he has taken. The long years of association count for much, especially where they have been marked by such a singular absence of friction in our counsels, as has been the case with us. If some of this absence of friction is due to the fact that the Van Ryn machine has been for years a remarkably smooth-running one, a great part of it has undoubtedly been due to the unvarying tact and courtesy with which Mr. Gillam has carried out his duties as chairman. Mr. Gillam has, it is unnecessary to say, done our State great services during these long years, and if I do not dwell more particularly on these today, it is because he is not saying "good-bye" to us, but is carrying on still, and actively sharing in the direction of the company. With regard to Mr. Gillam's successor, my colleagues have done me the honour to invite me to fill the vacancy. I may say that no claims of length of service as a director would have justified me in accepting the position had not my colleagues' invitation been accompanied by unanimous and very cordial expressions of goodwill and confidence. I shall do my best to justify that confidence, and may I add, gentlemen, that I hope as time goes on I shall be fortunate enough in the discharge of my duties to secure your goodwill and confidence too. I will now ask you, gentlemen, to listen to the remarks I have to make on the subject of our company's position, and in support of the resolution which I shall have to move for the adoption of the report and accounts. The financial year ended June 30 last, with which the accounts now in your hands deal, was not a very satisfactory one generally for the mining industry on the Rand. Owing to abnormal conditions diminished profits were the rule and a consequent reduction in the amounts distributed in dividends. This is especially true of the second six months of that period, and a comparison between the six months ended June 30 last and the corresponding six months of the previous year shows that 19 of the producing companies had to reduce their distributions in June last, whilst eight others fell out of the dividend-paying list altogether. One or two fortunate companies were able, it is true, for special reasons, to increase their rate of distribution, but, on the whole, there was a considerable falling away, and as a matter of fact, there was something like half a million sterling less distributed in dividends for that six months than there had been for the corresponding period of the previous year. Our own mine—the Van

Ryn—shares in this reduction, and the accounts before you reflect our position at June 30 last. If you will allow me, I will refer to one or two of the principal items of these accounts. The net profit for the year from all sources amounted to £96,804. This, added to the balance of profit brought forward from the previous year, gave us £122,768, out of which a dividend was paid for the six months ended December 31 last of 2s. 6d. per share, absorbing £62,500, and one for the six months ended June 30 last of 1s. per share absorbing £25,000 (as against £87,500 for the corresponding period of the previous year). During the year the capital expenditure amounted to £1,300 11s. 11d., which was met by the proceeds of sale of disused plant, £950, and the balance of £350 11s. 11d. written off. The sum of £34,710 has been carried forward to the current year. None of the items of the balance sheet require any special explanation, as the same form has been adopted as for many years past, and the alterations in the amounts are merely those occurring in the ordinary routine of business. But perhaps a word of explanation is called for by the item of unclaimed dividends, which now stands at the unusual figure of nearly £12,500. This is really a war item—the bulk of the amount being made up of dividends due to shareholders residing in, until recently, invaded territory with whom we have not for a long time been able to communicate, and from whom their dividends have perforce been withheld. Now that these fellow shareholders of ours have happily obtained their release it is to be supposed that this item will soon materially diminish. I may add that an enquiry has recently reached us from a shareholder for details of the item of £8,127 3s. 2d. appearing to the debit of profit and loss account under the head "General Charges, London." For the benefit of shareholders generally we are pleased to supply this information. The item is made up as follows: Rent and secretarial remuneration, £1,868 1s.; general charges, £504 19s. 2d.; advertising, £306 8s. 10d.; printing and stationery, £502 18s. 9d.; postage, £117 8s. 7d.; cablegrams, £12 7s. 6d.; audit fee, £84; agency charges, £100; directors' fees, £1,500; directors' commission, £1,875; French taxes, £1,257 19s. 4d. I now come, gentlemen, to the causes of our reduced profits. Put very briefly, they may be summarised thus: A reduction of 46,000 tons in the quantity of the ore crushed, with a reduction of £91,560 in the value of the gold won, and an addition of 1s. 6½d. in the cost of each ton crushed. This increase in the costs per ton is due to some extent to the decreased tonnage treated by reason of the distribution of the more or less fixed amount of standing charges over the smaller tonnage. The principal cause, however, as you have been informed already, is the enormous all-round increase in the cost of everything appertaining to the production and treatment of the ore in consequence of war conditions. The effect of this was not seriously felt during the first year or two of the war, as, firstly, large stocks of stores were held by the mining companies at pre-war prices; and, secondly, the rise in price has been gradual. At the present time, according to latest advices from the mine, the cost of almost every conceivable article required for gold production has increased by anything up to 400 or 500 per cent.

SIR GEORGE ALBU'S VIEWS.

Actual figures, however, speak louder than any general remarks I can make on the subject, and I therefore quote from the speech of your Managing Director, Sir George Albu, at the recent meeting of the General Mining and Finance Corporation, Ltd., in Johannesburg. He speaks of the

statement made by the President of the Transvaal Chamber of Mines that the total burden of increased costs borne by the industry (including the increased cost of both white and native labour) amounted in March of this year to over £5,000,000 per annum. This has undoubtedly largely increased since. Now consider this figure in relation to the published returns of dividends paid by Rand gold mining companies for the half-year ended June 30, 1918, which amounted to £2,858,192, and we may safely say that the burden of increased cost which the industry is bearing to-day represents approximately the amount of dividends paid. Or, in other words, that under pre-war conditions the dividends paid would have been twice the amount. Sir George Albu further states that according to statistics prepared by him, and which exclude such items as the war levy on profits and the extra cost of realising the gold, this burden represents an addition of 3s. 3d. per ton milled to the costs, as applied to the General Mining group of mines, which, translated into a figure which will be better understood by shareholders, means, in the case of our own mine, an addition of £3,970 per month. This, gentlemen, represents a considerable amount of discrepancy between our pre-war and our present profits. I might mention that amongst the items included in the above is one which I am sure you will agree is an expenditure we have made with very great pleasure, viz., £4,308 paid during the financial year to employees on active service and to their dependents, but which we hope will be somewhat reduced this year, and be altogether eliminated shortly. The remaining difference is accounted for by the gradual reduction in the recovery value obtained from our ore, which, while being a sufficiently serious matter, must not be taken too literally by shareholders. That is to say, while being true that the ore stopped to-day is inferior in value to that to which we were accustomed in the heyday of the mine's success, the grade has also been affected to some extent by "war conditions"—a phrase which has unfortunately itself become war-worn. I must explain this rather fully. Many of our skilled men have joined the colours and their places have had to be filled by a generally less efficient type, and we have also had to suffer—but in a more aggravated form—one of the customary "plagues" of Africa, viz., shortage of native labour. This has lately been accentuated in a most serious manner by the recent ravages of "Spanish influenza," which has not only resulted in many deaths amongst the native mine workers but has seriously disorganised the whole of the native labour supply. Not only have its effects on the native constitution been proved to be more lasting than in the case of whites, but the spread of the scourge to the native territories has almost paralysed recruiting for the time being. Now, as to the effect of all this on the grade, it has been well established that inefficient white supervision and labour, coupled with shortage of native labour, has a direct effect on the quality of rock mined. The limit of gold-bearing reef is not defined by clearly-indicated lines—say, of golden-yellow. There is practically no such thing as "visible gold" in Rand ore—many of you know this, of course—the precious metal being finely distributed in the rock, and it requires considerable knowledge and experience to mine clean gold-bearing ore. Want of experience and efficiency in this respect means lower grade.

THE GRADE OF ORE AND THE RESERVES.

That the average grade of the mine has fallen is indicated by the necessity which has arisen to reduce the average value of

the ore reserves by a corrective factor in order to arrive at a more accurate figure for the actual recovery to be expected. On this subject, and on the subject of the ore reserves generally, no words of mine can so clearly explain the conditions leading up to the necessity for the reductions in both tonnage and grade as those in which the Managing Director sets them out on page 4 of his report, and also on page 5, under the heading of "General." I will therefore ask shareholders who have not already done so to read this report carefully, and they will obtain a much clearer view of the position and circumstances than I can hope to convey. There is, however, one important factor affecting both ore reserves and grade which might be made clearer. It has been pointed out—and indeed it is obvious—that the higher the level of working costs becomes the greater is the quantity of existing ore reserves and of ore in process of development automatically ruled out of the payable category, because of the necessity for raising the pay limit. It is just as obvious, I think, that the temporary elimination of these blocks of ore means that the management has to draw to a larger extent on fair grade, and even higher grade rock, to counterbalance the extra expenditure as far as possible; and that this procedure, in the instance of a mine like the Van Ryn, which has nowadays no big scope for development, has a necessary tendency towards reducing the average value of the grade as and when these higher grade stopes become exhausted. This unavoidable process is almost negligible in its effect at first, but after three or four years of its application, such as has been necessary in the present instance, owing to the war, the time inevitably arrives when the cumulative effect becomes marked, and is reflected both in lower ore reserves and lower grade. Also it must be clear, by reason of the increased pay limit, current development opens up less payable ore in the aggregate than a similar footage of development would have done prior to the war.

WATER SUPPLY.

I may just refer in passing to the question of the water supply. I think the steps which have been taken at the mine will result in the company being made independent of outside sources, and that we shall not find it necessary in future to

purchase our supply, or any part of it, as we sometimes have had to do in the past, and occasionally at a heavy cost. I am reminded in speaking of water to tell you that the heavy floods of February and March last, which did so much damage to some of the mines on the Rand, fortunately did no harm worth recording to us.

NATIVE LABOUR.

I scarcely think I can usefully add anything to what the Managing Director says in his report on the subject of native labour. He tells you why on our property we cannot counteract a shortage of native labour by the employment of additional machines in the stopes. In referring to the important work of sand filling, he explains the position very fully, and shows how necessary this work is in dealing with the narrow reefs which we now have to attack in the mine, and also in preparing the way for dealing with the large number of pillars in the mine, which contain a considerable quantity of payable ore. The re-exploitation of the South Reef, more especially in the eastern section of our property, has distinct possibilities, and developments here will be awaited with considerable interest. The chairman in his remarks last year referred to the disability under which the gold mining industry suffers, as compared with every other industry in the world, in not being able to pass on to the consumer the increased cost of production by raising the price of the product. One effect of this was inevitable from the commencement—viz., that a great many of the low grade mines of the British Empire have had to shut down, and many more are on the verge of this course—because they are producing gold at a loss or, at any rate, without the reasonable amount of profit which the shareholders who invest their capital in these mines are entitled to expect. The serious effect of any great decrease in the production of gold on the re-organisation of the Empire's finances has been brought home to the Government, with the result that a strong committee has been appointed to consider and report on the whole situation. This does not necessarily mean any immediate material remedy but we must "wait and see"—the old formula—and hope that some practical benefit may come out of it for the sorely-tried low-grade mines. Before concluding what you will say, gentlemen, is

mainly an explanation of why the general position of our mine is not so favourable as it was a few years ago, I would just like to dwell on the other side for a moment. We have to realise that our mine—like many of us who have been associated with it for so long—is not getting younger. There have been indications of this during the past few years, but anything else could hardly be expected of a mine which has produced during its long and honourable career so many millions of gold and paid upwards of 2½ millions sterling in dividends. All the same, there is no question that it still has a strong vitality, and will carry on for a number of years to come. Even if conditions do not resume their pre-war level, they should gradually improve, and working costs come down from their present artificially high standard. Consequently, gentlemen, I can foresee the Van Ryn continuing to contribute substantially to the wealth of the Empire, with satisfactory profits to you all. In conclusion, I must say a word endorsing the reference in our report to the valuable services of the Managing Director, Sir George Albu, and his staff at the mine. It seems to me—and I think you will agree—that we are under a special obligation to record our recognition of these services at a time when the conditions under which they have been given have been so trying, unfavourable and full of anxiety.

THE DIVIDEND.

Before I sit down, gentlemen, I have to announce the declaration of a dividend for the current half-year of the same amount as for the previous six months, viz., 1s. per share. In view of the fact that the sum carried forward at June 30 last was nearly £9,000 in excess of that for the previous period, this declaration could have been slightly increased, but we have to bear in mind that this is only an interim dividend, carrying us through only half a year, and provision may have to be made for other contingencies that may arise. In expectation of a reduction in working costs the directors hope that in June next they may be able to reflect an improvement in the profits by an increase in the dividend rate. I now beg to move "That the report and accounts be received and adopted."

Mr. Leopold Albu (director): I beg to second the motion.

Zaaipplaats Tin.

The Zaaipplaats results for the month of December, 1918, are as follow:—Days run, 22 days; concentrates won, 45 long tons; estimated profit for the month, excluding Government taxes and directors' fees, £2,321 12s. 9d.; adjustment in respect of November, 1918, £803 9s. 7d.; profit declared for the month, £1,518 3s. 2d.; capital expenditure, £256 16s.

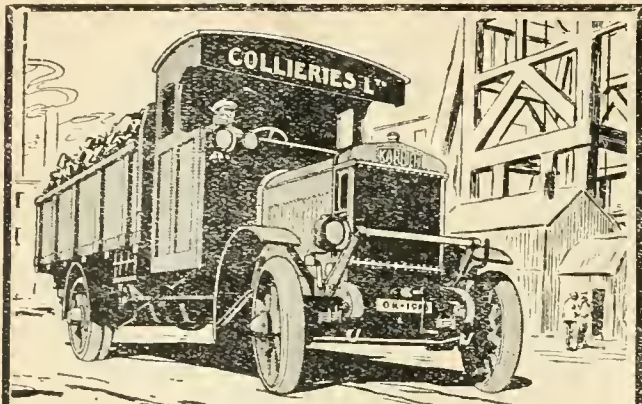
Mercury.

A discussion which has been carried on at recent meetings of the Chemical, Metallurgical and Mining Society of South Africa, deals with various phases of the relation between mill practice and mercury losses. In spite of the present high price of mercury, experiments carried out by members of the society who contributed to the discussion seem to establish the fact that there is no successful rival in the field to compete with plate amalgamation, and furthermore, that the aim should be to obtain as high an extraction as possible in the mill, the value of residues being kept at its lowest point by this policy. Regarding mercury losses, considerable disparity is shown in the figures quoted by different authorities. Richards states that the average loss would be about 0.339 ozs. per ton of ore treated, but it seems to be much lower on the Rand—about 0.1 oz. per ton. One large source of loss is shown to be the barrel or pan amalgamation of black sands, which frequently carry off mercury to the amount of from 9 to 15 lbs. per ton. It was found that grinding black sands for 10–20 hours before adding any mercury at all, greatly lightened the losses.

The Eastern Asiatic Company, a Danish concern interested in the extraction of oils from vegetable matter, and which has branches in Russia, Siberia, Manchuria, India and America, has secured a stretch of land, 15,000 acres in extent, in the Waterberg district, which it is intended to crop with oil-bearing plants. Cotton, soya beans, linseed, ground nuts, maize and castor oil plants will be grown, while it is intended further to experiment with jute. The entire area will be put under cultivation, and a European expert will direct the principal operations of the concern in the Transvaal. It has not been decided where the extraction plant factory will be established, but it is hoped that such plant will represent a very considerable industry in the Province.

Arsenic.

The war has focussed attention on arsenic. It has caused arsenic lodes to be opened up in several places for their arsenic values alone. But present prices of arsenic compounds must be regarded as purely war prices, quite ephemeral. Probably no arsenic mine will pay to work for arsenic alone after the war is over if steps are taken to compel our smelting works to recover blue dusts. Arsenic mines may, however, pay to work for the currency of the war and for a little time after. The working of these mines may lead to the discovery of other minerals of economic importance at the water level in the arsenic lodes, and the present search for arsenic by prospectors and others will enhance our knowledge of the mineral resources of the State. —Dr. H. J. Jensen, of the Queensland Geological Survey.



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DECLARATION OF DIVIDEND No. 35.

A DIVIDEND of 2½ per cent. (6d. per Share) has been declared by the Board for the period ending 31st January, 1919, payable to Shareholders registered in the Books of the Company at the close of business on 31st January, 1919.

The Transfer Books will be closed from the 1st to the 7th February, 1919, both days inclusive.

If possible the Dividend will be paid early in March, 1919, but owing to the irregularity in the mail service it is impossible to state the actual date of payment. The Warrants, however, will be dispatched to Shareholders as soon as possible after receipt of the final Transfer Returns from the London Office. These dispatched from the London Office to persons resident in the United Kingdom will be subject to a deduction of English Income Tax.

By Order of the Board.

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Per C. L. READ.

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THE SOUTH AFRICAN

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NOTICE.—The postage of this issue of the *S.A. Mining Journal and Engineering Record* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

Mr. E. A. du Pasquier has been elected President of the S.A. Institute of Electrical Engineers for the present year. At the monthly meeting of the Institute last Thursday week, Prof. Dobson delivered his valedictory address, covering the whole range of electrical developments in South Africa during the past year. We hope to print the address in an early issue.

* * * *

There are only three directors of Vaal River Gold Estates and they have sold the Klerksdorp property because of the impossibility of working it at a profit, the assets now consist entirely of shareholdings in South-Eastern Rand companies, particulars of which accompany the report. Amongst these interests are 60,000 Nigel Van Ryn Reef 10s. shares, 15,000 Houtpoort 2s. shares, 10,000 New Albion 5s. shares, 8,000 Boschfontein £1 shares, 2,000 Oceana Development, 8,000 Lomah Banket, 1,000 Eastern Van Ryn and Modderfontein Gold, 1,000 Rhodesia Consolidated, 1,000 Sub Nigel, 1,000 Daggafontein options, 5,000 Southern Van Ryn options and 1,000 Henderson's Transvaal options. There are also other interests, set forth in the circular referred to. The debenture debt has been reduced from £9,145 to £5,580.

* * * *

Considerable satisfaction was expressed at the recent annual meeting of the shareholders of Fraser & Chalmers. Chalmers, Ltd., in London, at the alliance which has recently taken place with the British General Electric Co. At first, negotiations proceeded on the lines that the general merchanting business in London and South Africa and the other branches should be retained by the company, but when the conditions were examined, and having regard to future trading and possible conflicting interests as to the rights of manufacture, it was decided it would be better to sell the manufacturing works and business as a whole, without attempting to retain any part thereof. This latter policy was therefore carried out on the basis of the book values as at March 31 last, and a substantial sum was paid for goodwill, patterns and drawings, amounting to £110,000. The South African business, as already announced, has been taken over by Messrs. Fraser & Chalmers (South Africa), Ltd. As to the probable return to the shareholders there is some question as to whether the preference shareholders are legally entitled to participate in the surplus, but on the assumption that they do not, it is estimated that the approximate return will be 32s. 6d. per share. In making this statement Mr. Tait, the chairman of the company, was careful to emphasise the fact that this figure was only an estimate, and he made it quite clear to the meeting that he would not commit himself. Mr. Vere H. Smith, an original shareholder, in a well-phrased speech, voiced the views of the shareholders generally, expressing the gratitude they felt to the board for the valuable services they had rendered in bringing the business to a satisfactory conclusion.

* * * *

It is our intention to alter, at an early date, the title of this paper to "*The S.A. Mining and Engineering Journal*," in order to indicate and emphasise the larger measure of attention that will in future be devoted to general engineering. Further notice will be given of the contemplated change.

* * * *

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

Mr. F. J. Dormer presided over a meeting of London shareholders of the New Heriot in mail week.

New Heriot. As he truly remarked, the Heriot has been one of the most successful gold mining ventures ever floated, and under normal conditions its prosperous career might have continued for several years to come. Circumstances, however, have been against it. There has been a falling off in the grade of the ore milled—this was due more to temporary difficulty in getting at certain parts of the mine than to poverty of the reef—working costs have been and are abnormally high, operations were interfered with by floods, and shortage of native labour was accentuated by the outbreak of influenza. The combined effect of all these adverse conditions is that for the first time in nearly 30 years the company worked at a loss, and, of course, nothing can be distributed by way of dividend. Mr. Dormer did not venture to forecast the prospects for the future, as, he said, "the situation is in some respects obscure," but a new manager has been appointed, who states that "given time, he is quite confident the position at the mine can be improved."

* * * *

The report of the Gold Mines Investment Co., Ltd., for the eleven months ended October 31

Gold Mines Investment. shows that a final dividend of 1s. per share was recommended, making a total of 2s. 6d. (free of tax) for the period, against nothing previous since 1912. An amount of £50,000 is transferred to a reserve fund, and there will be £25,375 to be carried forward. Nearly £29,000 profit was made out of the sale of investments during the period covered by the report. As compared with the schedule of assets as at November 30, 1917, the latest schedule shows that the company has sold its 10,500 Abbontiakoons, over 23,000 of its 39,900 Gold Fields Rhodesian Developments, 2,700 of its Springs, its small holding in the Consolidated Gold Fields, a few Gold Coast Amalgamated and Simmer Deep, and nearly half its Victoria Falls Preference. On the other hand, 7,500 Southern Van Ryn Reefs and 457 Modders have been bought, and the holdings of Orovilles, Ropps and Sub-Nigels have been increased.

* * * *

Some well-known Johannesburg business men are said to be interesting themselves in the project of an aeroplane company. It

A South African Aeroplane Company. is stated that all the capital needed for the purpose will be forthcoming when required. It is pointed out that the Governments of the Dominions will almost certainly be given priority in the acquisition of machines when released from war work, and in this connection it is stated that the Union Government is actually at present organising an aeroplane service to operate between the principal centres of the Union for the conveyance of mails and Government officials. It is, indeed, believed that the scheme is nearly completed. In regard to the starting of ordinary passenger services, the opinion is expressed that this will be left to private initiative and enterprise, and that the people in Johannesburg are fully alive to the necessity of not letting the grass grow under their feet.

* * * *

A letter from India conveys the information that an old-time pioneer of the Witwatersrand, Mr.

Death of Mr. C. F. Roberts. C. F. Roberts, M.E., died in Mysore, India, on the 13th December last year. Mr. Roberts was a foundation member of the South African Association of Engineers and Architects in 1893 and a member of the Council of that Society. 1899 found him established in Salisbury, Rhodesia, from where he was appointed engineer to the Champion Reef Gold Mining Co., Mysore, where he superintended the lay-out and erection of one of the largest hydro-electro power plants now in operation. Mr. Roberts' death was due to pneumonia supervening upon an attack of influenza. The late Mr. Roberts was a frequent contributor to the columns of this paper, and his death will be deplored by many of his old Rand contemporaries.

An effort is being made to revive the old Premier Tati Monarch Reef Gold Mining Co., Ltd., a

Victory Monarch. mine in the Tati district which was formerly well known as a property carrying good ore. One of the early day mines, it suffered the usual vicissitudes of over-capitalisation, indifferent management, and other troubles. A report by Mr. Thomas Temby, F.G.S., M.I.M.M., shows that a large body of good reef is apparently still available and that at a cost of £10,000 some 200,000 tons should be developed in a section that is reported to carry profitable milling ore. The nominal capital of the concern is placed at £75,000, of which £35,000 in cash goes to the vendors for a property equal to about 175 Transvaal gold claims, upon which a fair amount of work has been done, together with certain buildings. Plant, including a 20-stamp battery, will cost £12,000. The working capital proposed is £20,000, and reserve 20,000 shares of £1 each. The prospectus appears to be a carefully reasoned statement of the prospects of the undertaking. Mr. Temby considers from information that seems quite satisfactory to him that from ore already developed and awaiting treatment a profit of £49,100 may be obtained.

* * * *

The details of the Wit. Township, Estate and Finance Corporation merger with the Pretoria Townships appear to have been well received by the shareholders in both undertakings. It will be remembered

that an extraordinary general meeting of the first-named company is to be held in Johannesburg, on 26th February, for the purpose of passing resolutions approving the provisional agreement entered into 26th September, 1918, between the company and Pretoria Townships, Ltd., increasing the nominal capital of the company from £200,000 to £600,373, and authorising the directors to further increase it up to £1,000,000; also changing the name of the company to "South African Townships Mining and Finance Corporation." The principal provisions of the said agreement are that the Witwatersrand Township Company shall purchase the undertaking and property of Pretoria Townships as at 30th September, 1918, exclusive of the latter's holding of 11,218 Witwatersrand Township shares, and assume its liabilities and obligations as at that date; the consideration for the sale to be the allotment of 400,373 £1 fully-paid new shares in the Witwatersrand Township Estate and Finance Corporation, for distribution with the 11,218 shares in that company already held and making together 411,591, among the shareholders in Pretoria Townships, other than Witwatersrand Township Estate and Finance Corporation (which holds 88,409 shares)—that is, on the basis of one new share in the Witwatersrand Township Company for each share in Pretoria Townships previously held. The Witwatersrand Township Company to surrender for cancellation its said holding of 88,409 shares in Pretoria Townships and to receive no share in any distribution in the liquidation of Pretoria Townships.

* * * *

The report of the Middelburg Steam Coal and Coke Company for the year ended 30th June last states

Middelburg Steam Coal. that output aggregated 274,802 tons, a decrease of 34,763 tons, partly attributable to scarcity of railway trucks. During the year 47 working days were thus wasted. In the latter half a large influx of water, owing to excessive rainfall, also largely hampered production. Price of all material averaged 107 per cent. above pre-war average. Wages also considerably increased and working costs show a large increase, which has not been compensated by an equivalent advance in the selling price of coal. The balance brought forward, less final dividend, was £1,430, and profit from colliery, etc., less depreciation, was £17,245, together £18,675. After meeting London expenses, fees, interest, Preference dividend, interim on Ordinary shares, and Government duty, South Africa, there remained £7,429. The directors propose a final dividend of 3½ per cent., less tax at 3s. 9d. in the £, making 7½ per cent. for the year. Freehold surface rights over 400 morgen of Farm Blesboklaagte were purchased.

The annual meeting of Cape Copper Co., Ltd., held in mail week in London, provided another illustration of the difficulty of conducting mining properties under war conditions. Working costs have appreciably increased, notably for such items as transport, freight and insurance, the last two amounts alone accounting for an increase of £14,000. Then again the position at the Briton Ferry Smelting Works has been such that operations have been carried on at a loss. Continual advances in wages and higher costs for all materials are responsible for this state of affairs. In regard to the properties, the working of the Cape mines essentially depend on shipping facilities as coke from England has to be shipped to smelt the ore and then the resulting matte has to be sent home. With the shortage of freight at present existing, it will be easier to imagine rather than describe the position. Therefore it is not to be wondered that there is a heavy falling off in output. Moreover, owing to lack of coke the smelter only ran 170 days during the twelve months, and as the year closed on April 30 there has so far been no improvement in the returns. It was satisfactory to learn from Mr. T. Blair Reynolds, who presided, that he does not consider that the old mines are likely to be worked out for a few years yet, and that as soon as conditions become more normal there is no doubt operations can be continued with success. It is, however, to the Rakha Hills mines in India that the management look for the renewal of prosperity.

* * * *

A well-known member of the Johannesburg Stock Exchange in a letter dated October 31 to a London correspondent writes: "I

Will Working Costs Come Down?

went fully into the matter of working costs on the mines in general with a leading authority, and he says he is certain working costs will come down quicker than most people think as soon as we know the war is over, for the following reasons: Although the mines have all got nine to twelve months' supply of stores in hand at high prices, which will stop the quick reduction of working costs, all other things will come down and stores will come down gradually. He says even now during the last two weeks they have had all kinds of mining stores offered to them at 10 and 15 per cent. lower than current prices, but, of course, cannot buy as they are full up, but the longer this goes on the more the prices will come down if the merchants find they cannot sell. This is a point to show you how they have been hoarding, as a few weeks ago no one was offered mine stores and talked of shortages. He says the war insurance will come off and gold freight will come down, realisation charges be less, men coming back from the Front will take their places on the mines again, therefore saving war bonuses, and as food supplies come down the extra war bonus given to miners will automatically come down, but he does not think this will lead to trouble, as they will not be drastic with the miners. Say the cost of living comes down $7\frac{1}{2}$ per cent., they will only reduce the miner perhaps 5 per cent. of his war bonus, and in this way please everybody. He says it will not take much to get costs down 1s. per ton and gradually lower them each three or four months. . . . If we can reduce our working costs to any considerable extent all these mines that were on the point of closing down will be able to work and perhaps increase their outputs provided we are able to get some new inventions to substitute native labour. There is no doubt in the future, when working costs come down and these new mines come in to the gold producing stage, our great difficulty will be to get sufficient native labour without new machinery to keep up the supplies, and we shall never be able to get white men to take the place of natives. Our increased output depends on new mechanical inventions for winning gold so that we are not altogether dependent on our native labour supply."

TOPICS OF THE WEEK.

THE SHOW MINE OF THE RAND.

For several reasons the visit of the technical societies to the circular shaft section of the New Modderfontein last Saturday was a notable event in the history of the Rand. Firstly, because only a few weeks ago, at the annual meeting of the company, the chairman, Sir Evelyn Wallers, was able to lay before the shareholders a statement as satisfactory as it was unique in respect of ore reserve position and profit-making potentialities. Secondly, because last week Mr. Stuart Martin, to whom is due the credit for the successful lay-out and equipment of the section of the property visited, read a valuable paper explanatory of the advantages of the circular type of shaft he had designed for the New Modder, and his audience were thus afforded early and practical demonstration of its merits. Thirdly, because the visit, following close upon the Wit. Deep meeting, at which many hard things were said by some disgruntled shareholders about Corner House management, afforded tangible proof that, other things being equal, the engineering staff of that house could lay out a mine and design a surface plant that could not be beaten in any part of the world. That point was emphasised by Sir Evelyn Wallers in a humorous reference to the wise men who came to the Far East and proved their wisdom by tarrying not at the Wit. Deep! As Mr. Stuart Martin's recent paper read before the S.A. Institution of Engineers on the Circular Shaft may be familiar to our readers, and as his further paper on Circular Shafts is being printed in our columns, it is unnecessary for us to repeat here that description. A well-illustrated and carefully-prepared account of the circular shaft equipment was distributed by the management last Saturday, and from this we gather that the chief features of the reduction plant—the "last word" of its kind on the Rand—are as follows: (1) Thorough washing and elimination of fines before sorting. (2) Gravity flow from stamps to tubes. (3) New design of tube mill. (4) Isolation without decentralisation of plate house. (5) Continuous slime thickening by Dorr system. (6) Separation of sand and slime at a low elevation. (7) Flexibility of method of slime treatment. (8) Collection and treatment of sand in one tank. Regarding the new plant generally, which consists of 56 Nissens and eight tube mills, the chairman admitted at the last annual meeting that it cost a great deal more than originally estimated, owing to circumstances beyond control. However, the plant was paid for, and shareholders doubtless view the situation with satisfaction, seeing that several years of very valuable time have been gained by following a bold policy, and the company now possesses reduction plants capable of dealing with 100,000 tons of ore per month, which quantity the mine is fully equipped to supply so long as sufficient labour is available. The winder at the circular shaft was completed and operated from the first fortnight of October, since when the whole equipment has given every satisfaction, and the results achieved have been above anything shown in the past. While the shortage of native labour continues it will not be possible to operate the two reduction plants to their full capacity. It is, therefore, the intention to work the new plant to the full limit, leaving a spare capacity in the old plant, thus fully testing the possibilities of the new plant and putting the major portion of the tonnage through more up-to-date and efficient plant in order to secure a reduction in working costs. It may here also be recalled that the ore reserves as at 30th June, 1918, consisted of 9,000,000 tons of a value of 8.6 dwts. per ton. This reserve is fully developed and conveniently situated to either of the reduction plants, the underground arrangements being very elastic. It only remains to add that last Saturday's function was brought to a fitting close by notable speeches from representatives of the different scientific societies present. Thus metallurgists, mining and electrical engineers vied with one another in eulogising those features of the equipment upon which each was most competent to speak, and the whole formed a valuable expert testimony to the different engineers responsible for the work, and to the directors who had so courageously backed them.

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MINING AND ECONOMIC QUESTIONS IN THE UNION PARLIAMENT.

Wit. Deep Affairs—Something About Diamond Cutting, A Mint, A Delagoa Bay Deal, and Canteens for Mine Natives.

SEVERAL matters of importance to the mining and business community came up for consideration during the first week of this session of the Union Parliament. The following are the most noteworthy:—

WIT. DEEP MEETING.

Questioned about the alleged use of "enemy voting power" at the meeting of the Witwatersrand Deep shareholders on January 15, the Acting Prime Minister stated: "The position is this. Certain shares, previously registered in the names of enemies, were vested by an Order of Court in the Custodian and all rights incidental to the ownership of those shares thereby passed to that official. The number of these shares is 32,585, out of an issued capital of £550,000. At the present time the control of the company is in the hands of the Central Mining and Investment Corporation, but a body of shareholders are in favour of changing this control. After considering the matter, the Custodian, who is in the position of trustee, was, and is, of opinion that the interests for which he is responsible would in the meantime and pending further developments, be better served by the management of the company remaining in the present hands, than by a change to a new management unknown and untried, and, therefore, decided to use the voting power derived from the shares vested in him in support of the shareholders who were in favour of the re-election of the present board of directors. It appears that the public trustee in England previously took similar action in connection with enemy shares in this company vested in him. The legal position with regard to the question of the right of the Custodian to vote at meetings of the company and the intentions of the Trading with the Enemy Act, etc., were discussed verbally between the Custodian and the legal advisers."

NATIVE RECRUITING.

In the Senate on Tuesday, Senator Tucker moved that a return be laid on the table of the House showing the number of passes issued in the mining districts of Krugersdorp, Johannesburg, Germiston and Boksburg to natives on arrival in such districts from localities other than those mentioned during the calendar years 1917 and 1918, and the number of passes issued during those years to natives on leaving the districts mentioned. His reason for the motion was, he said, that he wished to know how many natives flowed into these industrial areas in the course of twelve months. The data given by the census was misleading. The Minister without Portfolio replied that steps were already being taken to supply the statistics.

DIAMOND CUTTING.

At question time, in reply to a question by Senator Ware, the Minister without Portfolio stated that the matter of establishing in South Africa a diamond cutting industry was receiving the careful attention of the Government.

A SOUTH AFRICAN MINT.

In reply to a question by Senator Whiteside, the Minister stated that the Government quite independently of any request of the Transvaal Provincial Council had inquired into the matter of establishing a branch mint and refinery in the Union, and was in communication with the Imperial Government on the subject. The Minister added that the Government had no intention to authorise the Transvaal Provincial Council to institute State lotteries or to tax Kaffir beer.

A DELAGOA BAY DEAL.

Col. Silburn, member for one of the Durban constituencies, in deference to the wish of the Government, withdrew a question he had set down referring to the possible acquisition of Delagoa Bay by the Union Government.

AN AVIATION SERVICE FOR S.A.

In the House of Assembly on Tuesday, Mr. Boydell asked the Acting Prime Minister whether the Union Government had been approached by the Imperial authorities in regard to the establishment of an aviation service to and from or within South Africa in connection with postal, passenger, or commercial traffic, and if so would the Minister make a statement on the subject, and if not, was the Government prepared to consider the question of establishing a State aviation service instead of leaving this future means of transport to private profit-making concerns. The Minister replied: The possibilities of aerial transport have been receiving careful consideration by an expert committee appointed by the Imperial Government, and a great amount of data has been collected with a view to dealing with the matter comprehensively. As a result of the work of this committee a draft international convention has been prepared, and will probably be discussed during the current year at an international conference called for the purpose. Domestic legislation for the United Kingdom has also been prepared, and these two measures have been sent for its information to the Union Government, and the subject matter is at present under consideration. No proposals for the establishment of aviation services have as yet come to hand. The Minister added: Realising the practical significance of air services in a country like the Union, which is one of long distances and partially developed communications, the Union postal administration as far back as November, 1917, addressed communications and requests for information relating to tentative mail or other services established by them to the postal administrations of Great Britain, the United States of America, and Italy. Interesting replies have been received, and further information has been promised as soon as data of practical value have been collected. When the matter has been sufficiently advanced legislation will be needed to secure the safety and efficiency of all aerial services. It cannot at this stage be stated whether State aviation services will be established, but the matter is obviously one which must demand consideration by the Government.

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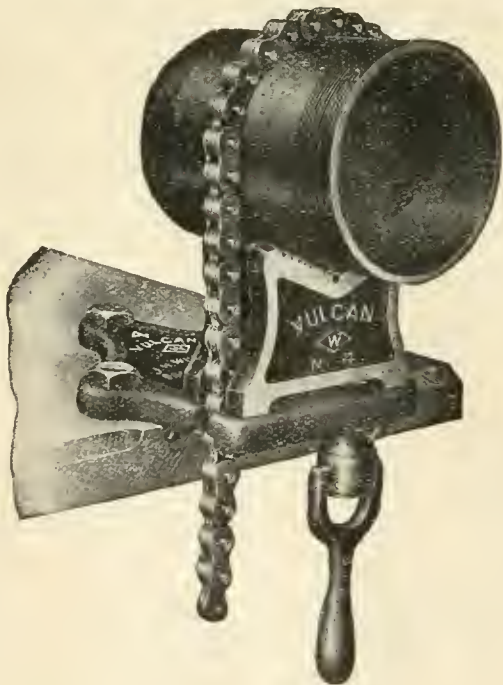
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LIQUOR FOR MINE NATIVES.

Mr. Rooth gave an exposition of his case for light wine Government canteens in the Rand area. Mr. Rooth's speech was mainly a restatement of the report itself. He quoted largely from its pages, and absolved the Government from all complicity. This, he said, was not a party matter. His thesis, briefly summarised, is that the illicit liquor laws have proved a gigantic failure; that the evidence establishes the fact that natives on the Rand can obtain liquor whenever they like; and that the effect of the law is most demoralising upon white as well as coloured, breeding criminals by the thousand. He cited the oft-told figures of convictions—168,000 in the past 16 years—and declared that in 1918 the returns showed the position to be worse than the average. He dwelt on the gigantic cost to the State, the breaking up of homes and the moral degradation. Sectional prohibition, he claimed, had failed. "I should like to try total prohibition," he told the house. Mr. Rooth maintained that the United States experience of total prohibition had proved a fallacy, for people who wanted liquor went to a chemist's shop and bought a snake bite antidote, which is very soothing. In introducing light wines canteens the Government, he suggested, could make an experiment in one area, and if it failed the result could not be worse than present day facts. He ridiculed the contention that the natives would get a craving for drink. He described the close compound system as impracticable in view of the 60,000 house boys and store boys scattered over the Rand, and he denied that if the experiment were tried the wine farmers would perpetuate such a system once it had been proved to be intolerable. The law could, in fact, be altered in two years if it failed, and in any case he thought the time had passed for continuing the unsuccessful doctrine of vicarious temperance which the Europeans had applied for the past 17 years.

THE CASE AGAINST.

The case against the acceptance of the report was placed by the Unionists in the hands of Mr. Wyndham, who made an admirably clear and concise summary of counter-argument. The remedy he condemned as worse than the disease, for he denied altogether the policy of the past could be described as a total failure. Before prohibition on the Rand came into operation 25 per cent. of the natives on the shifts were lost. To-day the percentage is less than one. These results, which were endorsed by the old experienced mining officer, Mr. Raine, showed that the law was not a failure but in a large measure a success. Mr. Wyndham laid emphasis on the fact that a native would go from the territories where liquor is prohibited to the Rand where he would find that the Government actually encouraged him to drink at the light wine canteens, and the result would inevitably be a demand, and a logical demand, for the extension of the sale of liquor to the Territories. He quoted the experience of the Western Province as showing that light wine tots lead to a demand for heavier wine and spirits among the Colonial people; and as for Mr. Rooth's suggestion that an experiment might be made, he pointed out that there is abundant evidence that light wines in sufficient quantity could not be produced for three years, that farmers would begin planting on an extensive scale, and that it would be practically impossible to reverse the experiment against the vested interests thereby established. Furthermore, experience has proved that the native who drinks does not want light wines; he wants spirits, and it is in spirits that all the illicit traffic is carried on. Mr. Wyndham pointed with great effect to the views expressed by almost all Magistrates that in order to control the illicit traffic it would be necessary to limit the sale of spirits to Government canteens; but Mr. Rooth, said Mr. Wyndham, dare not make such a proposal in this House. The debate remains unfinished.



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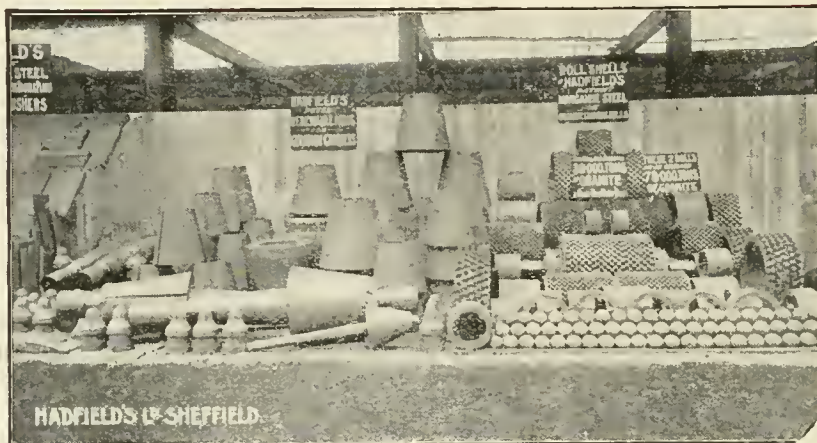
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RAND GOLD AND PEACE PROBLEMS.—III.

Jumpy Gold—The World's Workers—A Serious Position—The Paris Conference—Weakness in India—German Paper and British Gold—The Gold Producers: Their Real Interests.

It has been pointed out in the two previous articles that the Incheape Committee accepts the position that there is a direct relation between the prices paid for goods (including labour) and the quantity of gold in the banks of the civilised nations. When gold is scarce, prices fall; when gold is plentiful, prices rise. And it has been indicated too that these rises and falls are slow movements, taking years. But the effect is this, that gold becomes an unsatisfactory measure or gauge of values when time comes into the problem. If a sovereign can buy 5 bushels of corn at one time, 8 bushels a few years later, and only 3 bushels some years later still, the world is evidently trading on an extremely unstable and erratic basis of values. And it is this instability that is the trouble at the present time when the men and women of all civilised nations are facing a period of restricted business and therefore of unemployment.

MILLIONS OF WORKERS.

I suppose that all will agree that if tens of millions of men and women are presently wanting work the "unrest" of the unemployed will be a very serious danger to all established forms of government and to all property holders. Russia has a population of 170 millions, the Central Powers counted 140 millions, Serbia, Italy and Roumania can put in 50 millions more, making about 360 millions of human beings, all of whom are without any certain future; or, as in the case of the last three countries named, possess no adequate means of adjusting the severe economic pressures caused by the dislocations of war. Food prices are, for example, very high in Italy, and the stoppage of war industries may have a very serious effect in a country whose strategic position is of vast importance to all members of the British Empire. A reign of terror in Italy means that the Mediterranean area will become a revolutionary area for decades to come.

RESPONSIBILITY AND GOLD.

I mention this single possibility as a sort of sample: there are dozens of possibilities. Even in England we see that already impossible demands are being made. Clearly the question of the content and discontent of hundreds of millions of men and women is the main problem that faces all responsible men to-day. One of the main factors in this great responsibility is the gold supply of the world. Gold is the basis of the world's credit system. Free credit means enterprise, business, employment. Restricted credit means no business, falling prices, lower wages and unemployment. It is vital for all of us and for the societies of which we are units to strain every faculty to the solution of the complicated and almost insoluble problem of the reorganisation and re-establishment of a normal economic world, where the reward of effort shall be reasonably safe and confidence shall exist. This is why every proposal from bankers and financiers, and from gold producers must be closely scrutinised. For high prices are an essential condition of an employed and contented world. It must be so. If mills are running, factories humming, dockyards, mines and every other business in active movement, then raw materials and goods generally are in demand and therefore dearer, wages are higher and employment more constant. The opposite condition was fitly described by Disraeli in 1832 (the year of the Reform Act) in an address to his constituents. He said, describing the conditions then: "Ireland in rebellion; the farmer in doubt; the shipowner in despair; our merchants without trade; the revenue declining; the wealthy hoarding their useless capital." That is a picture of what happened after the Napoleonic wars, mainly owing to the exhaustion of the great Potosi silver mines in South America and consequent restriction of credit. It will happen

again with tenfold force if the exhaustion of the low-grade gold mines of the world is allowed to take effect in terms of the report of the Incheape Commission.

THE QUESTION OF TO-DAY.

The question to-day in technical terms is: Is the purchasing power of gold likely to rise? It would be easy to make it rise. We have only to adopt the recommendations of the Cunliffe Commission, which has just reported that "in our opinion it is imperative that after the war the conditions necessary to the maintenance of an effective gold standard should be restored without delay." We have only to send quantities of gold to India; we have only to curtail the present expansion of credit, or destroy the paper currency now circulating; we shall then get a rising value for gold, that is a fall in the prices of goods. But we shall get also revolution and ruin.

There is already evidence that credit facilities are stiffening. We have in the rising prices for our gold shares a proof that investors are not putting money into business enterprises; they are seeking safe investments where they will get their dividends regularly and not be bothered with the task of running enterprises during a period of uncertainty and possible losses. Now if all the investors follow this cautious policy, God help us! It is reckoned that the war has created about forty thousand millions of debt. Let us wipe out fifteen thousand millions as the share of the defeated Empires. That leaves twenty-five thousand millions as the war debt of the Allies. Four per cent. interest on twenty-five thousand millions is a thousand millions, which must be paid every year to the holders of the war bonds. Now the whole annual income of Britain before the war was only about 300 millions; the whole war debt of the 20 years of war with Napoleon was only 800 millions; and the total war debt of England before the war was about 700 millions: to-day it is ten times as great! Obviously to pay these stupendous sums in interest, every man and woman should be in full remunerative employment. If they are not at work they cannot pay, and it is useless to try and make them pay. But if the investors sit down to draw their interest because credit is scarce—because gold is scarce—we reach a condition of deadlock with all its possibilities of the employment of force as the final arbiter.

TWENTY-FIVE THOUSAND MILLIONS.

We must expect as the first immediate consequence of the war that capital will be timid. These bond-holders will wait and see, and twenty-five thousand millions of money will demand its pound of flesh, that is its legal rate of interest. There is no matter more momentous than the action of these "investors," who comprise a very large proportion of the people of the civilised world. Will their demands for a thousand millions of legal interest yearly be poised like an impending avalanche above the shaken and disorganised business worlds of Europe and America and Asia? How to get this "money" into active remunerative and confident employment is the real world problem. If it is not answered satisfactorily and quickly those important Peace Conferentists in Paris are merely idle chatters in a nest of volcanoes.

INDIA WEAKENING.

They seem to be quite unconscious of the dangers. Silver values, for example, are beginning to fall, but who regards them? Silver is India's asset. A few pence on the value of an ounce of silver adds a hundred millions to the value of India's hoards of silver. Recently silver rose in price from about 2s. an ounce to nearly 5s.; silver was wanted for war purchases in India. This rise added immensely to the wealth of India and naturally India has been prosperous and

happy and the revenue ample for her needs. But silver is falling again in value and India's wealth is diminishing with every drop of a penny per ounce. And no doubt Indian discontent is increasing likewise. It will take the new peer, Lord Sinha, all his time to persuade the ryots and the merchants of India that a few titles are compensation for smashed trade and depreciated hoards. The break in the world war prosperity, that contingency that is more to be dreaded than the plague, may well begin in India, where the standard of values is at the mercy of every gang of silver speculators that can persuade the politicians of London to maintain a depreciated currency in our greatest and most populous dependency. But they better look to it that no tricks are played with gold values; otherwise it would have been better for them had they been sunk in the sea with golden millstones round their necks.

PAPER AND SHELLS.

This problem of depreciated currencies is itself of a kind to turn one's hair grey. Long ago a friend wanted me to go into some Eastern business with him. "You buy your silver," he said, "at about half of its face value. The workman accepts, say, one shilling a day, but the 'shilling' costs you only sixpence as you buy the silver in bulk." It was a tempting proposal, but as it meant going into a new world I refused. But it illustrates the main factor in the foolish scheme that pays one man with one standard of values and pays another with another standard. If in Sparta you can buy your labour with iron money, the goods of Sparta can be sold cheaper than the goods of England; and if German and Russian workmen are to be paid in future with roubles and marks that are not worth their face value, then German and Russian goods will find their way into the markets of the world in spite of all barriers. What do our Wades and Andrews say to this fact, that the Indian and the Chinaman, who is paid in silver or brass, and the Russian and German, who is paid in depreciated paper money, can undersell the gold-paid Britisher every time. In Virginia, away back in the days of Queen Bess, the medium of exchange was wampum, a beads and shells contraption. Can a man who demands gold at 77s. 10d. an ounce sell his products at the same price as the man who accepts for his labour beads and shells at a penny an ounce? Raise the value of gold—that is, do what the Inchcape and Cunliffe Committees are advising us to do—and the value of the rouble and the mark and the krone becomes still more depreciated and the gap between German and British values of goods gapes wider than ever.

GOLD PRODUCERS' DEMANDS.

It is pretty obvious that there are more things in this philosophy of gold and prices than the average man dreams of. The Producers' Committee in London, which is advocating a subsidy for low-grade gold mines, is touching only one phase of it. The fact that there is a big war paper currency, says the Committee, has reacted on gold values, and the sovereign is now worth less than it was: it takes more gold to buy goods, and therefore costs are up, and the low-grade mines cannot make a profit. But this paper currency is comparatively a small matter. Whether it affects prices greatly is a disputed point. A sovereign was worth only 16s. or 17s. in actual buying value before the war when there was no paper currency to speak of, and if the sovereign is worth only 12s. now it is evident that a great part of this fall from 17s. to 12s. is due to war conditions. The Producers' Committee will do better if it takes up the wider position that the maintenance of present gold prices is a world issue, and that our social conditions are dependent to a great extent on the careful and far-reaching handling of this gold difficulty. What is wanted is time. Any hasty action that may cause a number of gold mines to close down, or disturb violently the banking position which is based at present on paper and gold combined, will probably be accompanied by irretrievable financial disaster. The Committee can take up a strong patriotic position in this matter. As a fact it would pay the gold producers to play for a scarcity of gold. When gold is scarce and prices are low, there is ample money for gambling

in gold mines, and the lower range of prices enables gold mining to be carried on at a profit. These were the conditions that started gold mining as a popular line of enterprise. In 1886 money was down to 3 per cent. and food and other values correspondingly low; consequently speculation in gold mines soon became fashionable. It is not the real and permanent interest of the gold producers to ask for subsidies to keep the gold output up. If they wanted to wreck things regardless of consequences they would send gold to India and do everything possible to cause a break in the world price of commodities—such a break as follows, so the Inchcape Committee reminds us, a decrease in the production of gold. The Committee therefore can easily prove that its permanent interests are really injured by this attempt to maintain the weak members of the gold industry; in the long run cheap money and restricted business enterprises favour gold miners better than expanding business, cheap credit, high prices and high costs. But this brings us to the second matter I proposed to touch on, namely, the cost of white labour. It is necessary to look at this question and its relation to prices and gold values before any suggestions can be made for a settlement.

(To be continued.)

African Banking Corporation: Increase of Capital.

Cable intimation has been received that the directors of the African Banking Corporation, Ltd., have arranged to increase the paid-up capital of the Bank of £1,000,000 by the issue of the 80,000 unissued shares of £10 each, £5 paid up. The new shares will be offered at a premium to all shareholders on the register as at January 2nd, 1919, in the proportion of two shares to every three shares held and the new shares will rank for dividend from September 30th, 1918. The issue is guaranteed. The Bank has also decided to establish a Colonial Share Register.

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THE WEEK IN THE SHAREMARKET.

Spurt in Government Areas—From Strength to Weakness.

Ox Friday afternoon there was a big run on Government Areas. A bid of 97s. 9d. was made for 5,000, but holders stood out for the extra 3d. At Saturday's call one sale of 100 was put through at 98s., but no more were obtainable at the price. The Modderfontein stocks were very firm, Springs Mines and Van Ryn Deeps both hardened. Consolidated Main Reefs, from whom an improvement was expected in certain quarters, fell back to 11s. West Springs have for three days oscillated on 1½d. differences, 24s. 10½d. to 25s., with business at both prices, mainly at the lower figure. After the call Government Areas had a further advance to 99s., but closed at 98s. 3d.; Springs rose to 67s. 9d. and Geduld Options to 13s. 9d. African Farms have stuck badly in the region of 15s. The other advances comprised Geduld Props, with sales at 44s.; New Modders, £26 15s.; Kleinfonteins at 10s. 6d.; Van Ryn Deeps were quoted at 69s. 3d. to 70s.; and Modder B. at £7 13s. 9d. to £7 15s. On Monday morning business was done in 25 stocks, with advances in Modder B., Kleinfonteins, Sub Nigels and Modder Easts. New Modders fell away with sellers at the last buying price. Only one sale of Government Areas was booked at 98s., and for the moment interest in this stock has died away. The price declined to 97s. 6d. during the day: The principal changes before the close were: Sales of Geduld Props, 41s.; Options, 14s. 3d. and 14s. 6d.; Kleinfonteins, 12s. 3d. and 12s. 1½d.; and Modder Deep, £7 10s. Once more, West Springs revolved all day in their vicious penny halfpenny orbit. The volume of business was less on Tuesday morning, but prices on the whole were well maintained. West Springs emerged at last from the vicious circle, and after sales at 25s. 6d. closed 25s. 3d. buyers. Pretoria Cements made a good recovery. The market was irregular on Wednesday morning with advances in Brakpans, Consolidated Langlaagtes, Modder Bs. and Alkalis, and falls in Geduld Props, Modder Deeps, Modder Easts and the Options, Sub Nigels, Van Ryn Deeps, and West Springs. The tendency was somewhat easier during the rest of the day to the close. On Thursday, at the call, every stock on the list of any importance was lower, with the exception of African Farms, Leeuwpoots and Mines Selection, all of which registered small advances. Geduld Options appeared for the first time on the official list at a quotation of 13s.—13s. 6d. Tweefontein United Colliery also were introduced. The preference shares were bid to 22s. 6d. without any selling offer. The ordinary shares after sales at 23s. and 24s., closed 24s. 6d. buyers. Dealings in outside stocks for the past week were:—Sales: Monteles, 18s.; Union Tins, 5s. 3d.; Makganyene, 30s. to 31s.; Sakalavas, 6s.; and Henderson's Options, 11d. Buyers and sellers: New Farms, 1s. 10d., buyer; Phoenix, 11d.—1s.

The following were the alterations in prices at Friday's call:—Sales: Crown Diamonds, 7s.; East Rands, 5s. 3d.; Government Areas, 97s.; Knight Centrals, 5s. 7d.; New State Areas, 22s. 3d.; West Springs, 24s. 10½d.; Zaaiplaats, 15s. 6d. Buyers and sellers: African Farms, 15s., 15s. 6d.; City Deeps, 50s., buyer; Clydesdales, 23s. 6d. ex London, seller; Consolidated Langlaagtes, 18s. 3d., 19s.; Daggafonteins, 25s. 3d., 26s.; Options, 5s. 3d., 6s.; Geduld Props, 43s., 43s. 6d.; Lace Props (new shares), 22s. 3d., buyer; Modder Bs., £7 15s. 6d. £7 17s. 6d.; Modder Deeps, £7 8s. 9d., seller; New Elands, 22s., 23s.; Premier Preferred, £7 15s.; £8; Pretoria Cements, 65s., 68s.; Springs, 66s., 67s.; Witwatersrand, 20s., seller.

	Fri., 17th.	Sat. 18th.	Mon., 20th.	Tues., 21st.	Wed., 22nd.	Thurs., 23rd.
African Farms . . .	15 0*	15 0*	15 1	15 0*	15 0*	15 3*
Anglo-Americans . .	—	32 6†	32 6†	32 6†	32 6†	32 6†
Apex Mines . . .	7 0*	7 0*	—	6 9*	6 9*	6 9*
Bantjes . . .	2 1	2 2	2 2	2 2	2 2*	2 2*
Brakpans . . .	67 6*	—	—	69 0*	70 0*	69 0*
Breyten Collieries . .	11 9*	—	11 9*	11 9*	—	11 9*
Brick and Potteries . .	—	5 0*	5 0*	5 0*	6 0†	5 0*
British South Africa . .	—	25 0†	—	21 0	—	23 0†
Bushveld Tins . . .	0 8*	0 6*	0 9	0 8*	0 9	—
Cassel Coals . . .	38 6†	49 0†	38 6†	38 6†	38 6†	—
Cinderella Cons . . .	5 0†	5 0†	4 9†	5 0†	4 6*	—

	Fri., 17th.	Sat. 18th.	Mon., 20th.	Tues., 21st.	Wed., 22nd.	Thurs., 23rd.
City and Suburbans . .	7 9*	7 6*	7 6*	8 0	—	8 0*
City Deeps . . .	—	—	46 0*	48 0	48 0*	48 0*
Clydesdale Colls. . .	22 6*	22 6*	22 6*	22 6*	—	25 0†
Cons. Investment . . .	22 6*	22 6*	22 6*	22 6*	22 6*	22 6*
Cons. Langlaagtes . . .	17 6*	17 6*	17 0*	17 6*	18 6	18 0*
Cons. Main Reefs . . .	11 6	11 0	11 0	11 6	11 0*	11 0*
Cons. Mines Selection . .	24 0*	25 0*	25 0*	24 9	25 0*	26 0*
Coronation Freeholds . .	1 5	1 5*	1 3*	1 3*	1 5	1 6
Coronation Synd. . .	—	1 9*	—	—	—	1 9*
Crown Diamonds . . .	5 0*	5 0*	5 3*	6 3*	6 6*	7 6
Daggafonteins . . .	25 0	24 6*	25 6*	25 6	—	23 9*
Do. Options . . .	5 6	5 9†	5 3*	5 6*	5 6†	5 0†
De Beers Deferred . . .	—	—	—	310 0*	—	—
Durban Road Deeps . .	—	—	—	6 9*	—	—
East Rand Coals . . .	2 6†	2 3*	2 3	2 4*	2 4†	2 3
East Rand Deeps . . .	1 0	—	1 0*	1 0*	1 0*	—
East Rand Minings . . .	17 0*	18 9*	19 0†	19 0†	19 0†	17 6*
East Rand Props . . .	6 3*	6 5†	6 0	5 6*	5 3*	5 0*
East Rand Debeest . . .	£66*	£66*	£66	—	£66*	—
Eastern Golds . . .	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Frank Smith Diam. . .	3 0*	—	3 0*	3 2*	3 6†	—
Geduld Props . . .	13 0	43 6*	44 0	44 6	43 6	42 9
Glencoe Collieries . . .	6 6*	—	6 0*	6 0*	—	—
Glynn's Lydenburgs . .	25 6*	—	25 6	26 0	25 6*	25 0*
Government Areas . . .	95 6	98 0	98 0	97 3	36 6*	96 0*
Hume Pipes . . .	29 0	—	28 0*	28 0*	28 0	28 0
Jupiters . . .	—	—	4 9†	—	—	5 0†
Klerksdorp Props . . .	3 0*	3 0*	3 0*	3 0	3 0*	—
Knight Centrals . . .	5 10	5 9	5 9	5 9*	6 0†	5 8
Knights Deeps . . .	—	—	—	5 3*	6 0*	—
Lace Props . . .	11 6	11 3*	11 3*	11 6	11 4*	11 6*
Leeuwpoot Tins . . .	25 0	24 0*	24 9	24 6*	24 9*	25 3
Lydenburg Farms . . .	9 5	9 7	10 1	9 9	9 6*	9 0
Middelvel Estates . . .	—	—	—	1 0	—	—
Modder B's . . .	150 0*	151 3*	154 6	154 0*	156 0	156 3*
Modder Deeps . . .	147 6	149 6	148 6*	150 0*	148 6*	150 0†
Modder Easts . . .	19 6	19 7†	19 9	19 9*	19 3*	19 0*
Do. Options (3 years) . .	4 11*	4 9*	4 9*	5 0	4 9*	4 9†
Do. Options (4 years) . .	6 2†	6 0	6 0	6 0*	6 0	6 0†
Natal Nav. Colls. . .	21 0*	21 0*	21 0*	21 0*	21 0*	21 0*
National Banks . . .	293 9*	293 9*	293 9*	295 0*	295 0*	—
New Boksburgs . . .	1 0*	1 0	1 0*	1 0*	1 0*	1 0*
New Eland Diam. . .	22 6*	25 0†	25 0†	—	21 6*	24 0†
New Era Cons. . .	10 3	10 9	10 9	10 6*	11 6†	—
New Geduld Deeps . . .	5 10	5 9*	5 9*	5 10	6 0	—
New Heriots . . .	13 0*	13 6*	13 0*	13 3*	13 0*	13 0*
New Kleinfonteins . . .	10 0	10 0	11 6	11 9	11 9	11 9*
New Modders . . .	535 0*	535 0*	530 0*	537 6*	537 6*	525 0*
New Unifeds . . .	7 0†	—	—	—	—	—
Nigels . . .	4 0*	4 0*	6 0†	4 0*	4 0*	4 0*
New States . . .	22 0	22 9	22 6*	22 6	22 6	21 6*
Premier Deferred . . .	—	150 0*	—	150 0*	—	150 0*
Pretoria Cements . . .	62 0*	62 6*	62 6*	65 0	64 0*	64 0*
Princess Estates . . .	2 10*	2 10*	3 0	2 10*	2 11*	2 10*
Rand Collieries . . .	3 6*	3 6*	3 6*	3 6*	3 6*	3 6*
Rand Nucleus . . .	2 0†	—	1 9*	1 9*	1 10	1 10*
Rand Selections . . .	82 0*	83 0†	82 3*	81 0*	81 0*	83 0†
Randfontein Deeps . . .	5 0*	4 10	5 2	5 0*	5 0*	5 0*
Randfonteins . . .	—	—	—	14 0*	14 0*	14 0
Rooibergs . . .	6 9*	6 9*	6 10*	—	6 6*	6 3*
Rooipoort Uniteds . . .	2 6*	—	2 6*	2 6*	—	2 6*
Rose Deeps . . .	—	—	—	—	—	19 0†
Ryan Nigels . . .	3 3*	—	3 3*	—	3 3*	3 3*
Shebas . . .	1 9*	1 9*	1 9*	1 9*	1 9*	2 0†
Simmer and Jacks . . .	—	—	—	—	5 9†	6 0†
Simmer Deeps . . .	2 6†	2 0*	2 6†	2 6†	2 0†	—
S.A. Breweries . . .	32 6*	33 0*	32 6*	33 0*	33 0*	33 0*
S.A. Lands . . .	6 5*	6 3*	6 5	6 4*	6 2*	6 1*
Springs Mines . . .	66 3	67 3	67 9	68 0*	67 0*	66 3
Sub Nigels . . .	27 6*	27 6	27 9	27 6*	27 6	27 0
S. Van Ryns . . .	13 3*	13 3	13 3	13 0	12 9*	12 6*
S.A. Alkalis . . .	32 6*	30 0*	31 0†	30 0*	30 0*	31 0*
Transvaal Lands . . .	26 0*	26 6	25 0*	25 0*	25 0*	25 0*
Transvaal G.M. Est. . .	—	—	—	13 6*	—	—
Van Ryn Deeps . . .	67 9*	68 6	69 0*	70 0	68 9*	68 6*
Village Deeps . . .	16 0*	16 6*	16 0*	16 0*	—	16 3*
West Rand Cons. . .	4 0*	—	—	—	—	—
Witbank Colls. . .	55 6*	—	55 6*	55 6*	55 6*	—
Wit. Deeps . . .	12 0	12 0†	10 0*	10 0*	10 3†	10 0
Wit. Townships . . .	30 0†	—	30 0†	27 6†	—	—
Wolluters . . .	3 0*	3 3*	3 4*	3 5*	3 5*	3 5*
West Springs . . .	24 9	25 0	24 10½	25 1½	24 6*	24 7½
Do. Options . . .	10 6*	10 9	10 6*	10 9*	—	—
Zaaiplaats Tins . . .	15 5	15 4	15 0*	15 0*	15 0*	15 3*

There were buyers of Union 5 per cent. Loan up to £102 17s. 6d.

*Buyers. †Sellers. AOdd lots. BEX London.

HOW TO ELIMINATE ENEMY CONTROL OF COMPANIES.

No Bearer Share Warrants—Foreign Interests Limited to 40 Per Cent. of Share Capital and One-Fourth of the Directorate.

FEARS are often expressed that at no great interval after Peace is signed, foreign control of companies registered in the British Empire may be revived. In the United Kingdom, at any rate, under the provisions of the Companies (Foreign Interests) Act of 1917 this is impossible; and doubtless the Union of South Africa will speedily follow suit. In the case of new companies being registered in the United Kingdom, or old ones reconstructed to eliminate enemy control, we find that the following, *inter alia*, provisions are inserted for the purpose of restricting or limiting the proportion or amount of the capital of the company and of the voting power in the company, and of the control upon the board of the company which may be exercised by or on behalf of aliens, and no alteration in these provisions shall be of any effect until it has received the written consent of the Board of Trade pursuant to the Companies (Foreign Interests) Act, 1917:—

(A) The company shall not be entitled to issue share warrants to bearer. (B) Every application for the allotment of shares and every transfer of shares presented for registration shall be accompanied by: (1) In the case of an application made by, or transfer to, an individual, a declaration by the applicant or transferee stating whether he is or is not a British subject, and whether he has or has not ever taken an oath of allegiance or otherwise become a citizen or subject of any, and, if so, what, enemy or foreign sovereign or state; and, if a British subject, whether he is a natural-born British subject, or a British subject by naturalization or otherwise, and if naturalized, whether he remains for any purpose in the allegiance of any, and, if so, what, enemy or foreign sovereign or state. (2) In the case of an application made by, or transfer to, a corporation, a declaration made on behalf of the corporation by the secretary or other officer authorized in that behalf stating whether the corporation is an enemy or foreign corporation or a corporation under enemy or foreign control. (3) In each of the said cases a declaration made as aforesaid stating whether there is or is not any arrangement under which the applicant or transferee will hold the shares or any of the shares, if allotted or transferred to such applicant or transferee in trust for or on behalf of or in any way directly or indirectly under the control or directions of any enemy or foreigner or enemy or foreign state, or enemy or foreign corporation, or any corporation under enemy or foreign control, and if any such arrangement exists the nature thereof; and in any case the directors may, before making any allotment or passing any transfer, require such further evidence as in their absolute discretion they think necessary in support of any such declaration.

(C) No share shall, without the previous consent in writing of the Board of Trade, be held by any enemy or by any member in trust for or on behalf of, or in any way, directly or indirectly, at the disposal or under the control or directions of any enemy or enemy state or enemy corporation or corporation under enemy control. (D) The directors shall not, without the previous consent in writing of the Board of Trade, allot any shares or register any transfer of shares which it may appear from the declaration to be made under clause (B) would upon such allotment or transfer be held in contravention of clause (C). (E) In the event of its being proved to the satisfaction of the directors (a) that any share is at any time held in contravention of the provisions of clause (C) or (D) that the declaration to be made under clause (B) is untrue as regards any of the shares to which such declaration relates such shares shall in case (a) and may in case (b), be forfeited by resolution of the directors, which shall be final and conclusive and not subject to question by any person on any ground whatever, and upon such resolution being passed the holder of such shares shall cease to have any interest therein or claim against the company in respect thereof or for the payment of any sums paid up thereon. (F) The directors shall not without the consent of the Board of Trade allot any shares or register any transfer of shares, the allotment or registration of which would cause more than forty per cent. of the total of the issued share capital or more than twenty-five per cent. of the voting power for the time being of the company to be held by foreigners and/or foreign corporations, or corporations under foreign control, and/or by any person who as shown by the declaration to be made under clause (B) holds shares in trust for or on behalf of or in any way directly or indirectly under the control or directions of any foreigner, foreign state, foreign corporation or corporation under foreign control, and may also decline to register any transfer of shares to any person who, even though such person be a British subject, may by resolution of the directors (which shall be final and conclusive, and not subject to any question by any person on any ground whatever) be declared to be an undesirable person to admit to membership, on the ground that such person is, in the opinion of the directors, subject to the influence of any enemy state, body, person or corporation, or corporation under enemy control.

DIRECTORATE.

(L) No enemy shall be qualified to be a director or alternate director, and not less than three-fourths of the board, including the chairman thereof, shall at all times be British subjects resident in the United Kingdom. (M) The office of a director shall be vacated—(a) If he cease to be a British subject, or cease to reside in the United Kingdom, and by reason of his so doing there ceases to be a three-fourths majority of the Board who are British subjects resident in the United Kingdom. (b) If he be called upon in writing by at least three-fourths of all the other directors for the time being to resign office on the ground that he is in their opinion, subject to the influence of an enemy state, body, person, or corporation, or a corporation under enemy control, and for that reason is not a desirable person to hold office as a director, and so that the opinion of a three-fourths majority of the other directors so expressed shall not be subject to question or control by any person or on any ground whatsoever.

The Metal Struggle.

In an interesting article on the coming "Metal Struggle" with Germany, the *Daily Mail* had the following with regard to the disposal of the interests of Messrs. Henry R. Merton & Co.: "In the United States the Merton firm had a large holding in the American Metal Company, which is now in charge of the Custodian of Enemy Property. The holding is valued at about £750,000. An attempt to form a syndicate to take over this Merton holding was disallowed, but it will doubtless pass to American interests. . . . The British Metals Corporation has not secured directly the Merton assets in England. They consisted mainly of the control of Williams Foster & Co. and Pascoe Grenfell & Sons, and this control has been acquired by the Central Mining Company. But the Central Mining Company has one of the largest participations, £200,000, in the British Metals Corporation. An even larger participator in the British Metals Corporation is the great copper-producing company, the Rio Tinto, which has a holding of £250,000. Other important participators in the corporation are Messrs. Morgan Grenfell & Co. and many of the investment trust companies, especially those of Mr. Robert Fleming's group."

SALE OF Suction Gas Engine and Gas Plant, etc.

BY PUBLIC TENDER.

TENDERS are hereby invited for the purchase of the under-mentioned Machinery *in situ*:—

- One 115 B.H.P. Suction Gas Engine and Gas Plant, complete with all necessary Pipes, Fittings and Water Tanks, fitted with Petrol Engine driven compressed air starter.
- One 10in. Centrifugal Pump.
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- Two 16in. Sluice Valves.
- Two 16in. Retaining Valves.

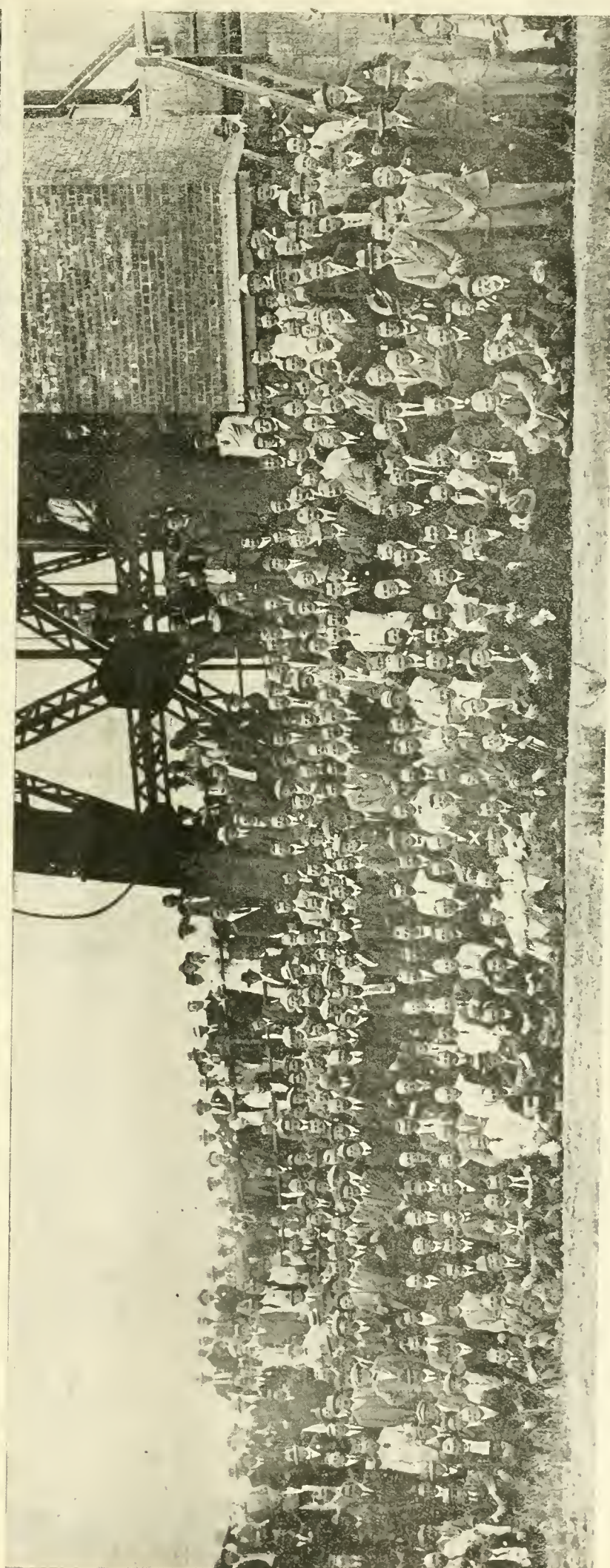
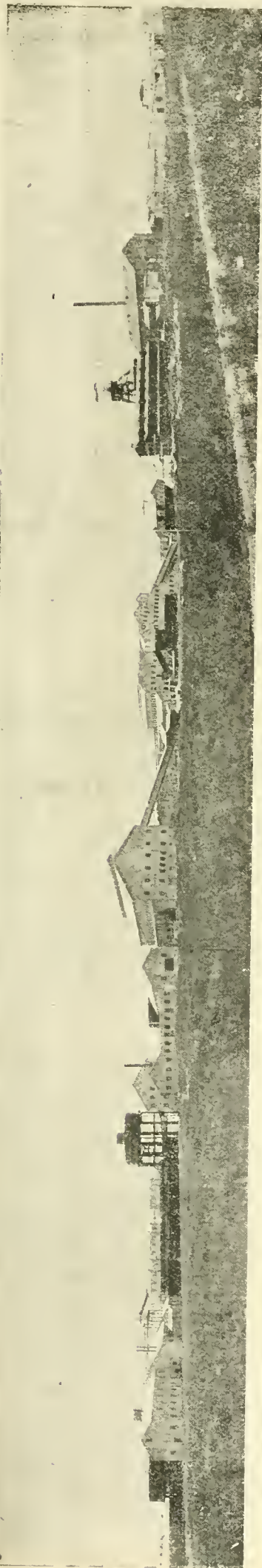
The above are situated in the Gamka Oost Irrigation District, about 33 miles from Oudtshoorn.

Any further particulars may be had on application to the Director of Irrigation, Union Buildings, Pretoria, from whom permission can be obtained to inspect the Plant.

Sealed Tenders, superscribed "Tender for Suction Gas Plant," must be addressed to the Chairman of the Union Tender Board, Union Buildings, Pretoria, and must be in his hands by 12 o'clock noon on Wednesday, the 26th day of February, 1919.

The highest or any tender not necessarily accepted.

NEW MODDER CIRCULAR SHAFT REDUCTION WORKS.



A VISIT TO THE RICHEST GOLD MINE IN THE WORLD.

Last Saturday the biggest technical excursion ever held on the Rand took place, when the members of the Institution of Engineers, the Institute of Electrical Engineers, and the Chemical, Metalurgical and Mining Society visited the New Modderfontein Gold Mine, the richest gold mine in the world. Our pictures show: (1) A general panoramic view of the new reduction works at the Circular Shaft. (2) A group of the visitors. In the center of the group, marked with a white cross, is Sir Evelyn Wallers, the Chairman of the Mine and President of the Chamber of Mines.

Photo by 7 Brittan.

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SOUTH AFRICA THE WORLD'S RECORD HOLDER IN ASBESTOS PRODUCTION.

Official Review of Occurrences, Distribution and Value of Different Varieties.

WE have received from the Geological Survey an exhaustive illustrated treatise of 155 pages on asbestos in the Union, the work of Mr. A. L. Hall, the Assistant Director of the Survey. In his introduction Mr. Hall points out that among the numerous far-reaching effects of the present world situation, not the least important has been the increased activity in the development of the natural resources of many countries. In a young dependency like South Africa this stimulus is likely to be specially felt. The opening up of new markets, readjustments of the conditions of supply and demand, the closing of established sources, and other economic factors have directed keener attention to the resources of our sub-continent, and the notable impetus to industrial developments recently manifested in many fresh directions is a wholesome sign of the times. In the domain of mineral resources the more energetic search for new deposits of economic use and the more vigorous exploitation of known ones are bearing good results. Under these circumstances the South African asbestos industry is acquiring increased importance. Mr. Hall states that his object is to give a connected review of the present state of our knowledge regarding the various kinds of asbestiform minerals within the Union, their mode of occurrence, distribution, and comparative value of different varieties in the industrial applications of the raw material. Recent discoveries in the Transvaal have yielded new varieties of asbestos of remarkable fibre-length and in large quantities, so that South Africa now holds the world's record in the variety and length of fibre, as well as in the proportion of spinnable deposit; very little information of these new fields has hitherto been available. We append Mr. Hall's own summary and conclusions:—

The outstanding features regarding the mode of occurrence and distribution of asbestos within the Union may be summarized as follows:—The Union of South Africa contains asbestos deposits of very considerable extent and holds the world's record as regards varieties of fibre, while it occupies the leading position as a crocidolite producer; in areal extent the crocidolite belt of the Cape Province is the largest asbestos area of any kind hitherto recorded. The fibre varieties comprise the following, enumerated in approximate order of abundance: Crocidolite, amosite, chrysotile, and tremolite. As commercial sources these varieties are distributed: In the Cape, crocidolite; in the Transvaal, crocidolite, amosite, tremolite, and chrysotile; in Natal, chrysotile and tremolite. The Free State has not so far furnished any asbestos deposits. Crocidolite or "Cape Blue" is the best-known and longest developed variety in the Union, its occurrences having been exploited practically without interruption since 1892; in this work the Cape Asbestos Company (established 1893) has maintained a strong lead. The crocidolite belt in the Cape is restricted to the north-western parts of the Province (mainly Griqualand West) and reaches as a narrow strip of country from a point

some twenty miles south of Prieska in a general northerly direction across the Orange River through Griquatown, Daniels Kuil, and Kuruman at least as far north as Tsenin on the Mashowing River. It measures some 250 miles in length, with a maximum width of over 30 miles. This distribution coincides with the Lower Griqua Town Series, now correlated with the Pretoria Series as the highest division of the Transvaal System; it consists of a great thickness of thinly bedded ferruginous siliceous slates or banded ironstone, to which the crocidolite is confined in the form of many strictly interbedded cross-fibre seams, ranging from the exceptional maximum of about 5 inches downwards; most of the seams consist of lavender blue fibre from $\frac{1}{4}$ inch to 1 inch in length. Crocidolite in this belt occurs at a very large number of localities more or less over the entire area, but often—especially in the northern part—in closer proximity to the underlying limestones of the Campbell Rand Series. Two sections of the fibre are recognized: the southern section, comprising the oldest and most important workings (on the Orange River) round Westerberg and Koegas, the local headquarters of the Cape Asbestos Company's mines; the northern section extends from the neighbourhood of Daniels Kuil northwards through Kuruman (including the Asbestos Mountains and the Kuruman Hills), where the deposits have been opened up since about 1910 by a number of smaller producers. Mining developments usually proceed by means of open-cast workings, sometimes extending a little underground on the dip; this is more especially the case in the northern section, whereas in the southern some of the mines are by now worked on more systematic lines to deeper levels (Westerberg). In the Transvaal crocidolite is restricted to the north-eastern part of the Province, situated east of Chuniespoort and embracing portions of the Haenertsburg Goldfields. Here the interbedded cross-fibre seams occur in the basal portion of the Pretoria Series close to the underlying Dolomite, in ferruginous siliceous slates, practically indistinguishable from the banded ironstones of Griqualand West, and consist of the same lavender blue fibre as in the Cape belt, with sensibly the same dimensions as regards width. Though known since 1905, they have been opened up only during the last two or three years, and their exploitation is still to a large extent in its initial stages. Amosite has so far been found in the Transvaal only. It apparently forms a new variety of asbestos as a monoclinic ferrous silicate amphibole with or without soda. It is found at a number of localities in the Lydenburg and Pietersburg Districts over a narrow strip of country extending from the Steelpoort River north-westwards through Sekukuniland at least as far as the Malips River and Chuniespoort through a distance of some sixty miles over an average width of about three miles. Amosite is an ash-grey or pale brownish mineral, occurring as interbedded cross-fibre seams in the same banded ironstones of the basal portion of the Pretoria Series (close to the underlying Dolomite) in which the crocidolite in the Haenertsburg Goldfields is found. The length ranges from the not uncommon value of 11 inches downwards, but the principal amosite horizon in Sekukuniland is strongly characterised by thick seams, very frequently from 4 to 7 inches wide over considerable distances. This asbestos was known as far back as 1907, but its systematic development only began some three or four years ago, and the main deposits, now well opened up in the Egnep and Amosa Mines on the right bank of the Olifants River, reveal large quantities of this unique fibre length. Chrysotile forms a commercial occurrence so far in the Carolina District of the Transvaal only, where several farms—some twenty-five miles east of Carolina—show a persistent fibre horizon almost at the top of the Dolomite within a few feet of an intrusive diabasic sill and over a distance of some two to three miles along the strike. This asbestos forms cross-fibre seams interbedded in altered dolomite and ranging from the very rare maximum of 7 inches downwards. Seams in the neighbourhood of

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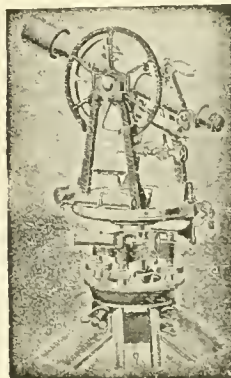
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$\frac{1}{2}$ inch in thickness are the common experience. They have been worked at intervals for a number of years, but, compared with the crocidolite and amosite reserves, the supply is distinctly more limited; the fibre has the familiar brilliant white appearance of the best chrysotile, is of superior quality, and closely resembles Canadian chrysotile. In Natal chrysotile is found in Zululand near the Middle Drift over the Tugela River, where it has been exploited at the Sitilo Mine; here one finds cross-fibre seams in dark greenish serpentine and disposed vertically along and very close to the contact with an aplite intrusion. The remaining asbestos—tremolite—has been worked in Natal, where the Buffalo Asbestos Company have opened up a number of slip-fibre seams, several inches thick, in pale greenish talcose rocks on the Klipriver Location of Zululand, some forty-six miles from Dundee. The same variety has also been exploited in the Zoutpansberg District north of Mara Siding. As regards mode of origin, the crocidolite and amosite seams are most probably derived from ferruginous sediments carrying some form of soda as an original constituent, not by lateral secretion along open fissures, but by growth *in situ*, the constant presence of magnesia being probably genetically connected with the proximity to underlying dolomitic beds. The Transvaal chrysotile seams are also derived from the alteration of sediments, due to the subsequent serpentinization of magnesian silicates resulting from the thermal metamorphism of siliceous dolomitic rocks consequent upon a basic intrusion. This mode of origin is probably identical with that of the chrysotile deposits from Grand Cañon, Arizona, to which the Carolina chrysotile (and also an occurrence of the same asbestos at Chuniespoort) show a remarkably close resemblance. On the other hand, the Sitilo deposits of Zululand appear more closely analogous to the Canadian type of deposit, due to the serpentinization of massive igneous rocks of ultra basic characters. The preceding chapters have shown that the Union possesses great reserves of asbestos, and the remarkable increase in the total output during the last four years or so, in spite of the almost complete disorganization of oversea markets and shipping conditions, is a striking feature. While Canadian chrysotile—of which only a small fraction is spinnable—still maintains a leading position in supplying raw material for the asbestos industry, the superiority of crocidolite for certain articles of manufacture has brought about its successful use in a variety of goods turned out by the European factories of the Cape Asbestos Company. Both crocidolite and amosite are available in large quantities, and these are greatly superior to Canadian chrysotile in the spinnability proportion, which amounts to some 70 per cent, in case of Cape blue, while no difficulty has so far been experienced in keeping the entire amosite output of spinnable length. The present international economic situation has seriously interfered

with a regular production and disposal of fibre from the Union, so that the successful efforts to establish a local manufacturing industry of asbestos goods are specially welcome. Such factories exist at Salt River, near Capetown, Durban, Johannesburg, and Dundee, in which crocidolite, amosite or tremolite (with its country rock of talc) are adapted to various uses; among these the requirements of the building material and engineering trades claim first attention, *e.g.*, roofing tiles, flooring composition, boiler lagging, etc. Such increased activities react favourably on the local cement industry and stimulate the exploitation of the Union's mineral resources in other directions. The suitability of Cape blue for the manufacture of goods requiring spun fibre has long been well established, and recent experiments carried out under proper technical conditions have demonstrated that amosite can also be fiberized and adapted for yarn production. The marked industrial revival now apparent in many directions of South African effort, the proof that the more important fibre deposits of this Dominion possess the requisite commercial advantages of quality and quantity, the many further uses to which such asbestos—with its very high proportion of spinnable fibre—might be extended (as pointed out above), and, lastly, the successful establishment of several local asbestos factories, entitle one to the belief that a wide and increasing field of utility awaits our deposits. In this beneficial result the growing self-consciousness of a South African nationality will not have been the least important factor.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Small Man."—You cannot go far wrong by ignoring all touting share pushers.

"Cement."—There is a Rhodesian cement-making company, and the head office is, we believe, in Bulawayo.

"South African."—The question, as you may have seen since you wrote, is being debated this week in the Union Parliament.

"Debenture Holder."—We are making enquiries, and quite agree with you regarding the importance of the principle involved.

"Interested."—Thanks for your appreciation and for the cutting enclosed in your letter.

"Another Shareholder."—Your letter arrived too late for insertion this week.

Preventing the Growth of Cast Iron.

Amongst the fascinating problems which make engineering science at once a most exacting and a most fruitful study, the characteristic behaviour of metals under varying conditions provides many curious cases. For example, grey cast iron grows appreciably in volume when exposed to high temperature. This characteristic, which causes much trouble in cast dies, valve seatings and other parts, is believed to be due to internal oxidation caused by the penetration of hot gases into the metal. A remedy recently suggested in England is to eliminate free graphite from the surface of the metal, this being the cause of its porosity. Successful results have been obtained by annealing the parts for several days in iron rust at a temperature of from 1,650 to 1,830 degrees Fahrenheit.

Electrical Advance in Great Britain During the War.

One of the most striking developments in industrial Britain during the war has been the enormous development in electricity supply, and with it a corresponding development in electrical manufactures as relating to the industrial applications of electricity, whether for lighting, heating or power. Between 50 and 100 electricity stations might be cited in which the plant capacity has been more than doubled during the past four years. The output of electrical energy has been increased to nearly the same extent. Unparalleled demands have been made upon manufacturers of lamps and lighting fittings, of motors and power auxiliaries, of electric furnaces and welding equipment, for munition purposes.

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THE OUTLOOK FOR TWEEFONTEIN UNITED COLLIERIES.

Largest Single Coal Producer in South Africa—Improved Mond Treatment for Waste Coal.

The fact that an official quotation for the shares of the Tweefontein United Collieries was given this week on the local Stock Exchange has drawn attention to the position and prospects of this important undertaking. The new company is an amalgamation of coal companies acquired by the Henderson Estates as parent company, and claims to be the largest single coal producer in South Africa. It will be recalled that Tweefontein Mine was developed by Henderson's ten years ago and has paid for some years past regular dividends of 10 per cent. on preferent and 25 per cent. on ordinary shares. The Premier Coal Estates property was acquired in 1911 and their allotment with the Transvaal Coal Owners' Association was added to Tweefontein output. The Oogies Mines was then acquired from the Transvaal Coal Trust. A second mine opened up by Henderson Consolidated, adjoining Tweefontein, was the last acquired, and a full description of its layout and plant appeared in our pages some months ago. The enlarged company now stands with an issued capital of 400,000 ordinary shares and 75,000 preferent and participating shares. 100,000 ordinary shares are under option at par to lenders of £100,000 and 75,000 preferent and participating shares are on option at par to holders of Tweefontein Colliery preferent shares. The first dividend on the issued capital was 6 per cent. paid to June last. Preferent and participating shares receive 6 per cent. in preferent dividend, and after ordinary shares have received 6 per cent., the preferent may receive a further 4 per cent. Any balance of profit available for dividend after preferent have received 10 per cent. is paid to ordinary shares. The company's coal ground covers 15,538 acres of proved coal ground held in freehold, plus 4,918 acres of which the coal rights with all

necessary surface rights are owned. Of the 15,538 acres freehold 13,810 are at Tweefontein, 1,728 acres at Oogies. Tweefontein area is estimated to contain 45,000,000 tons best quality coal and 120,000,000 second quality. Oogies has 7,500,000 best quality with a large tonnage not figured on of second. It is noteworthy that the company has now five equipped shafts supplying three plants. It is claimed that its combined allotment in the Transvaal Coal Owners' Association tends to economy in cost of production and provides security in supply of Association's requirements. The company's normal output based on the Association's average trade would be 96,000 tons or thereabouts. The company is registered in South Africa with the head office in Henderson's Estates office, Mr. William Pott being chairman, Mr. Frank Simon general mining manager and consultant, and Mr. E. Williams is in charge of Oogies work.

TREATMENT OF WASTE COAL.

We are informed that the company have plans ready for a serious endeavour to deal profitably with the enormous amount of waste coal. It is hoped that a great deal of the initial plant will be locally manufactured if cost is not prohibitive. The coal is high in nitrogen contents and an improved Mond system will be the treatment adopted, sulphate of ammonia being the chief direct product. The waste of coal of a quality not quite up to present market requirements has frequently been animadverted upon in our columns, for at least 100,000 tons of really valuable coal is lost every month to the Transvaal. The field for development in saving waste here is unlimited and in the absence of direct Government support, any company that, like the Tweefontein United, can successfully turn its waste to good advantage will assuredly deserve well of the country and reap a merited reward for its shareholders.

It is notified for general information that Mr. Marcel Andreoli has been appointed as Acting Mining Commissioner for the mining districts of Klerksdorp and Ottoshoop, with effect from the 4th January, 1919, vice Mr. H. Rees, Mining Commissioner, absent on leave.

Five Million Electric Combine.

The English Electric Co., Ltd., has been registered in London, with a nominal capital of £5,000,000 in £1 shares (1,500,000 6 per cent. pref. and 3,500,000 ordinary). The objects are: To carry on the business of electrical, mechanical, hydraulic, and general engineers and contractors. The first directors are:—C. T. Cayley, 5 Portland Place, W. (chairman of Dick, Kerr & Co., Ltd.); B. A. Firth, Norfolk Works, Sheffield (chairman of Thomas Firth & Sons, Ltd.); W. Rutherford, 3 Abchurch Yard, E.C. (managing director of Dick, Kerr & Co., Ltd.); J. Sampson, 8 The Sanctuary, Westminster, S.W. (director of John Brown & Co., Ltd.); P. J. Pybus, Thornbury, Bradford (managing director of Phoenix Dynamo Co., Ltd.); Colonel J. H. Mansell, The Chase, near Coventry (managing director of Coventry Ordnance Works, Ltd.); A. Gracie, Fairfield Works, Glasgow, engineer; W. L. Hichens, 3 Central Buildings, Westminster, S.W. (chairman of Cammell, Laird & Co., Ltd.); C. E. Ellis, Rampton Manor, Notts, manufacturer.



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Design a Novelty for South Africa—Value of Long Cage Compartments—Improved Ventilation Facilities.

[By W. L. WHITE, Consulting Engineer to the Barnato Group of Mines.]

THE two vertical shafts recently started at Randfontein and at the New State Areas are of a shape which is quite a novelty for South Africa. The principal features are as follows:—(1) The size of the excavation at Randfontein is 28ft. 9in. x 13ft. 1in., and at the New State Areas 28ft. 9in. x 13ft. 9in.; in both cases allowing 6in. for blocking. (2) The compartments are 6ft. within x 10ft. 7in. at Randfontein, and 11ft. 3in. at the New State Areas. (3) The bratticed compartment is 6ft. x 4ft. at Randfontein, and 6ft. x 5ft. at the New State Areas. The bratticing consists of tongued and grooved flooring boards, put together in panels on the surface and nailed to a strip 3in. x 3in. The panels are nailed to the shaft timbers, and the corner pieces are provided as shown. The ventilation compartment communicates with a duct leading under the bank to a fan of from 30,000 to 40,000 cubic feet per minute capacity, this fan being situated at some convenient spot. (4) In compartments 1 and 2 there are two pairs of runners; in compartments 3 and 4 there are four pairs of runners as shown. These runners are all of 8in. x 4in. section, and fastened to the dividers by two bolts through cast-iron chairs of a pattern shown, the chairs being fastened to the dividers by two 5-8in. bolts. (5) The wall plates, end plates, and dividers are all of 9in. section. The cross piece carrying one side of the bratticed compartment is of 4in. x 6in. section. Corner studdles are 8in. square; middle studdles 10in. x 4in., with 3in. lap over the dividers. Bearer sets are put in every 140ft.; five pieces of 8in. x 8in. under (a) and (b), and three pieces under (d) and (e)—the number at (a) and (b) being increased to take the weight of air and water columns. The dividers are dapped in 1½in. at each end. (6) The area of the clear space, including the air duct, is 248 square feet at Randfontein, and 264 square feet at the New State Areas; so that at 1,000 feet per minute these shafts will downcast 248,000 and 264,000 cubic feet of air per minute respectively.

These are the chief points in the design of the shafts, and perhaps a little further explanation may be useful so as to make clear the objects we had in view in the particular design. Many of the members have doubtless been down the older style of five-compartment and seven-compartment shafts during sinking, and must have noticed the great inconvenience and difficulty with which the shovelling had to be done. In the drawings are shown, in elevation, the skip in the Government Gold Mining Areas' shafts ready for shovelling, and the skip in the New State Areas' shafts ready for shovelling. The tipping horn has been put behind the skip guides in the latter shafts, and the front side is open for shovelling. With the old type of skip practically all the rock had to be shovelled over the two sides, which were made still more inconvenient by reason of the position of the horn and the smallness of the spaces that were open for shovelling. The skip stood 4ft. high when resting on the broken rock, and carried two tons. In the latter shape the skip is open for shovelling practically on three sides, stands 4ft. 1in. high, and carries 3 tons. This is the explanation of width of the compartments being increased to 6ft. within as against 5ft. within in the older shape. Each of the eight engines on these four shafts is a direct-acting engine, and capable of speeds from 1,900 feet per minute to 2,350 feet per minute. The principal engine on each shaft serves No. 2 and 3 compartments, and hoists practically all the rock. The second engine serves No. 1 and 4 compartments, and is the timbermen's hoist. It may hoist rock to some extent, but—unless the blasts are very heavy indeed—it is found most convenient to hoist all the rock with the two skips in the middle of the

shaft. The two pairs of runners are intended for balers if very heavy water is met with during sinking, and it becomes necessary to erect a third engine.

The bratticed compartment is a result of the difficulties experienced in increasing the amount of fresh air entering the workings of the Government Gold Mining Areas previous to any connection between the shafts. In these shafts the end compartment was bratticed off by boards placed horizontally and scribed to the rock faces. Without fans these compartments were upcasting about 4,000 cubic feet per minute; with fans it was found that, although the fan was drawing perhaps 20,000 cubic feet, the actual amount of fresh air was only increased to about 6,000 cubic feet. The cement gun would probably overcome this difficulty at some expense, but at the time it was found impossible to make the joints between the deals and rock faces sufficiently tight to get more than 6,000 cubic feet of fresh air into the workings. This point was a very important one, and by using tongued and grooved flooring boards, and fastening to the timbers as described, it is hoped to provide these mines during development—and before connection has been made—with ample quantities of fresh air—with corresponding effect on the health of the workers and efficiency of the work. The point is specially important where, as in the case of the Far East Rand, long distances have to be driven, and double shift work is necessary in order to bring a mine rapidly to the producing stage.

The last point to draw attention to is the provision of long cage compartments with four runners in each. The amount of time consumed in man handling work and steel is very great on these fields, and although arrangements can be made to sling special trollies under the skips in narrow shafts, the simplest and most expeditious way is to run trucks of timber, steel and other stores straight into the cage, which is of sufficient length to take all jumpers and practically all timber when piled horizontally in trucks. Efficient and expeditious use of hoisting engines means a corresponding reduction in size of engines and saving of capital. Thus, the hoisting equipment on the New State Areas consists of two engines pulling a four-ton net load, and two engines pulling a three-ton net load. The two shafts will be connected with a haulage underground, and these engines will serve the property up to a capacity of 150,000 tons per month. Both engines would handle natives and white men at the beginning and end of the shift; and allowing four hours for this work, and inspection in the case of each hoist, six hours for drills and timber in the case of the second hoist, the main hoist would be hoisting rock for twenty hours, and the second hoist for fourteen hours. This would give a total capacity of 78,000 tons per month for each shaft from a depth of 3,800 feet.

(To be continued.)

Mine Cables.

To obviate fire and other risks to miners consequent upon the presence of transmission cables in the operating shaft, the Anaconda Copper Co. has driven 3½-in. diamond drill holes through solid rock to provide for carrying electric cables to the 1,200, 2,200 and 2,800 ft. levels for operating pumps, blowers, and fans. The cable is three-conductor 400,000 circ. mil., with varnished cambric, ¼-in. lead, and 0.18-in. galvanised steel wire. The over-all diameter is 2.03 in., and the weight 16.6 lb. per ft. The cable is suspended from a cable bell at the surface, and the greatest length of cable let down in one piece is 650 ft. The pumping loads supplied on the three levels are about 1,200 h.p., 1,200 h.p., and 900 h.p. respectively.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Why Not Chinese Labour? Lessons from France.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—Having recently returned from France, where I saw ever so many thousands of "Chinks" working over there in the Labour Corps, I should like to make a suggestion. No doubt it is quite fresh in the minds of a great many people what fuss there was made when Chinese labour was first introduced on the Rand. I suppose there were more lies told and written by both English Radical and South African politicians on the subject than on any other thing in the history of the country. The Radicals painted the "Chinks" in chains with whips and "shambokys" being bandied about and led to work on the mines as gangs of slaves. The South Africans accused the Mine people of ruining the country, and if a "Chink" sneezed too loud he was accused of attempting murder, rape, and other crimes. Now all that is past and over—the country was none the worse for the Chinese advent, and it was the means of making the native realise that he is not indispensable. There could be sufficient testimony brought forward to-day by Englishmen who formerly ran down the Chinese and called them murderers and slaves, &c., &c., to prove that they have rendered excellent service in France, that although they enjoyed freedom and liberties that were denied the natives, their behaviour has been and is still quite good. They have worked well and intelligently, but they require careful handling and some little understanding. All the non-commissioned officers in the various Chinese Labour Corps were either English Tommies or Colonial men. I do not think one per cent. could at first speak the Chinese language, and yet within a few months they were able to exact as much work out of the "Chinks" as any other Labour Corps. These were the only people who did not come strictly under the King's regulations, and could not be as severely punished as others who were treated as soldiers.

Since my return from France I notice a difference in the bearing and attitude of the natives of this country. There is an air of disloyalty about them, and the majority I am convinced are pro-German. They speak and they write in their papers most sneeringly about both Dutch and English. There is also an atmosphere of seething discontent amongst the Kaffir politicians, as well as amongst all the labourers. Now whether people choose to believe it or not, I am convinced that the mine natives will be only too willing to go out on strike whenever the white man leads them out. It is quite possible that natives employed in other spheres of labour may also be induced to join a strike for higher wages.

We are also hearing the talk of equal rights, claims for political privileges, and even such rot as intermarriage.

Let us now take my suggestion into consideration, i.e., to divert into this country two or three hundred thousand Chinese labourers now returning from France, who are a good respectable class of worker. The result would be this: First: That the Kaffir would be put into his place, having it brought home to him that he is not indispensable. Secondly: It would free between two and three thousand natives who could be better employed on the farms. That would give cheaper labour to our farmers to help them to make simultaneous progress with the Mining and Diamond Industry. Most of your readers, sir, I presume, are acquainted with the early history when gold was discovered first in Arizona and afterwards in California, and with what results. The foolish people of Arizona allowed the mine owners to absorb all the local labour of the country, with the result that the farms were neglected and foodstuffs had to be imported, and when the mines were exhausted the country had made no

progress. The wiser people of California took Arizona as an object lesson, so that when gold was discovered the inhabitants told the mine owners that they were quite welcome to take out the gold so long as they brought their own labour, but they would see them in Hades before they allowed all the farm hands to be tempted to rush to the mines for the high wages offered by the gold companies, and which the farmers were unable to pay. The result of this brain wave is world wide knowledge. California benefited by the mines, and the circulation of the immense amount of money expended in their development. Farm labour remained cheap, and the agricultural industry advanced side by side with the gold industry, so that eventually when the gold petered out California was exporting her agricultural produce to all corners of the globe. Even in this country I blush to say that we import yearly thousands of pounds of foodstuffs, jams, and fruit from California. All this could be produced in the country if the farmers could get cheaper labour, and when our mines peter out (and they of course will do), the country could be self-supporting. I offer the suggestion for what it is worth. I saw the good work of the Chinese in France.

Yours,

EX-SERGT.,
134, Chinese Labour Corps.

New Kleinfontein.

The report of the directors of the New Kleinfontein for the quarter ended 31st December, 1918, shows:—Mine: Shaft sinking—number of feet sunk, 211 ft.; number of feet ore bins, etc., 78 ft.; development (excluding shafts)—number of feet driven, risen and sunk, excluding boxholes, 3,501 ft.; footage sampled, 2,750 ft.; footage sampled (payable), 650 ft.; mining width (payable), 56 in.; assay value (payable), 9.80 dwts.; number of feet boxholed for sampling purposes, 74 ft. Ore treatment: Ore milled, 146,460 tons. Capital expenditure, shaft sinking and equipment, £5,668. Revenue and expenditure: Working costs, £194,325, or £1 6s. 6d. per ton milled; revenue, £188,467, or £1 5s. 9d. per ton milled; loss, £5,858. The influenza epidemic adversely affected results for the quarter. No allowance has been made in the above statement for interest amounting to £2,646.

It is notified that the Commissioner of Examiners for Mechanical and Electrical Engineers' Certificates of Competency will hold the next examination on Wednesday, Thursday, and Friday, the 19th, 20th and 21st February, 1919, at 9.15 a.m., at the South African School of Mines and Technology, Eloff Street, Johannesburg, and also at Dundee, Bloemfontein, and Kimberley, if a sufficient number of candidates present themselves. The prescribed form of application is obtainable, without payment, by applying to the Secretary to the Commissions of Examiners, P.O. Box 1132, Johannesburg. Those wishing to enter for the examination must send in their applications to reach the Secretary by the 6th February, 1919. The following syllabus of examination is published for information, and a detailed copy thereof will be supplied on application to the secretary: Mechanical engineers: Legal knowledge, strength of materials and design of structures, power plant, driven machinery and mechanical appliances, electro-technics (elementary). Electrical engineers: Legal knowledge, strength of materials, power plant, driven machinery and mechanical appliances, electro-technics (advanced). Candidates for examination as mechanical or electrical engineers to take charge of machinery on mines will, in addition to the foregoing subjects, be examined in "Mining plant."

THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*—III.

[By P. A. WAGNER, B.Sc., Ing.D.]

COPPER.

Practically the whole of the copper output of the Union, amounting in 1917 to 20,131,614 tons, valued at £1,126,040, comes from the Messina Mine in the Northern Transvaal and the mines of the Cape and Namaqua Copper Companies in Little Namaqualand. None of these mines are equipped for the actual production of the metal, and have hitherto exported all their copper in the form of hand-picked ore, concentrate, and matte. The industry has in consequence received a very serious set-back from the recently published decree of the Ministry of Shipping prohibiting the shipment of copper ore, matte, and concentrate. The Namaqua Copper Company, after nearly 50 years of continuous production, has decided temporarily to close down their mines. The Cape Copper Company are continuing operations, and propose stocking the matte and concentrate produced. The Messina Company, on the other hand, are endeavouring to obtain equipment to enable them to produce blister copper. In any case, the outlook of the copper mining industry was none too bright. In the Namaqualand mines the grade had of recent years fallen to such an extent as to cause the gravest concern; and at the last annual meeting of the Messina Company shareholders were informed that they had "to contemplate the unpleasant fact that the life of the mine may be approaching its end." The future of the Namaqualand copper region, where enormous quantities of low-grade ore, averaging from $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent. copper, are available in the existing mines and in the hundreds of ore-bodies that have not hitherto been opened up,† depends on the introduction of economical methods such as leaching flotation for the beneficiation of this material. As pointed out by Trevor,‡ the ore in question is well over the grade that is being profitably exploited on a vast scale in the United States and in Chile, in areas just as inaccessible and inhospitable, and there is no apparent reason, therefore, why the introduction of modern methods of treatment should not give this grand old mining field a new lease of life. At Messina it is a question of locating further rich ore-bodies of the type being worked, which have been shown to owe their origin to a process of secondary enrichment by descending solutions. Exploratory work has for several years past been conducted by the management on approved scientific lines, and it is to be hoped that their efforts will bear fruit.

TIN.

The tin production of the Union for 1917 shows a considerable decrease compared with 1913. This is due to the fact that during 1916 and 1917 poor zones were encountered at some of the principal mines. At the present time the workings of all the more important producers are in good, or fairly good, ore, and if the high price of tin be maintained, it is not improbable that, as regards value, the 1918 output will constitute a record. Apart from a small production of alluvial tin from the Kuils River fields near Capetown, the whole of the output|| comes from the Bushveld province of the Transvaal, which includes two distinct tin-bearing areas, known respectively as the Waterberg and the Olifants River fields. Of these the former, occupying a large crescent-shaped area in the central portion of the Waterberg district, are the more important. The output of the Olifants River fields, which extend in a north and south direction from the farm Mutue Fides, in the south-eastern corner of the Waterberg district, to the Elands River, is, however, steadily increasing. The deposits of both

areas exhibit an extraordinary diversity of type, and are as yet but imperfectly understood. From the experience gained in the different mines and prospects, however, one fact stands out, and that is that, within the limits of either of these tin fields, it pays to follow up the merest indication. It is also relevant to observe that fissure deposits in the quartzites of the Rooiberg series and pipe occurrences in the Red Granite have hitherto given far more favourable results than deposits in the felsites and shales of the Waterberg system. In view of the many disappointments that have attended the opening up of our tin occurrences and the unenviable reputation that the Bushveld deposits, in general, have earned for impersistence, it is a pleasure to be able to record of one of them—the No. 13 pipe of the Zaaipplaats Company—that it has been followed for a distance of 2,400 feet, measured along the dip, and at the greatest depth hitherto attained—about 400 feet—is as productive as it was near the surface. The most notable event in connection with the tin mining industry in 1917 was the erection by the Zaaipplaats Company of a tin smeltery. Hitherto all the cassiterite won in the Union has been exported in the form of concentrate, containing from 65 to 70 per cent. of metallic tin, to the Malay States, where better prices are obtainable for this material than in England. About a year ago the Zaaipplaats Company, owing to the increasing difficulty and cost of shipping their concentrate, decided to smelt it on the spot, and have experienced no difficulty in obtaining ingot tin containing 99.5 per cent. of the metal, for which there is a ready sale locally. Encouraged by the success of this pioneer smelting venture, all the other large producers are erecting furnaces, and it appears safe to predict that in future only metallic tin will be exported from South Africa.

ASBESTOS.

The asbestos industry of South Africa has made remarkable progress since 1913, and, as I have pointed out elsewhere,§ appears to be capable of almost indefinite expansion. Exports are limited at the present time by the lack of shipping space, and there will without doubt be a considerable increase in the output after the war. Practically the entire production of the Union is obtained from the deposits of Griqualand West and the Lydenburg district of the Transvaal, which occur at almost the same horizon as the Pretoria series, and are among the most extensive occurrences of asbestos now being mined in any country. The Griqualand West fields yield blue or crocidolite asbestos, and the Lydenburg fields a pale-coloured iron-amphibole asbestos. The output of the Lydenburg fields, which produce fibre up to 10 inches in length, is already considerably in excess of that of Griqualand West, notwithstanding the fact that their exploitation only began two years ago. The

§ Cf. S.A. Journ. Industries, November, 1917.

* Being Presidential Address read before the S.A. Association for the Advancement of Science.

† Cf. Rogers, A. W.: *Proc. Geol. Soc. S.A.* (1915), 21-34.

‡ Cf. *The South African Year-Book*, 443.

|| The output of the alluvial tin-fields of Swaziland, amounting to about 350 tons of concentrate per annum, is not included in the returns.

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THREE SEAS BRAND.

bulk of the asbestos produced in South Africa is exported. It is gratifying, however, to be able to record that the local asbestos manufacturing industry is steadily expanding. Three firms are now making asbestos-cement tiles and slabs for roofing, ceilings, and partitions. Another concern is engaged in the manufacture of asbestos flooring, and yet another is putting on the market a patent asbestos composition for covering boilers and steam-pipes.

CORUNDUM.

That South Africa ranks at the present time as the leading corundum-producing country, and is likely to continue almost indefinitely to hold that position is not generally known. Much the greater part of the output, amounting to about 400 tons per month, is derived from the Zoutpansberg fields, in the Northern Transvaal, which constitute by far the largest and most important corundum-producing area in the world. There is also a small production in the Leydsdorp division of the Transvaal, and in the Steinkopf district of Namaqualand. The bulk of the corundum exported is in the form of eluvial crystals, for the most part broken, that are separated by sifting and washing from the thin soil and sub-soil of the areas in question. A smaller proportion is boulder- or rock-corundum, in which the mineral is associated with varying amounts of other minerals. The position and prospects of the South African corundum industry are fully dealt with in a recent article in the *Journal of Industries*.[†]

ANTIMONY.

The increase in the price of this metal, caused by the demand for it for war purposes, has given a great impetus to antimony-mining and smelting in South Africa. Considerable quantities of antimonite are available in certain of the mines on the so-called "Antimony Line" of bedded gold-quartz veins in the Murchison Range, and a very promising occurrence is being worked in the Steynsdorp division of the Barberton district. The bulk of the antimonite recovered is reduced to the metallic state and used in the manufacture of antifriction and white metals, for which there is a fairly large demand in South Africa. Part of the antimonite produced in the Murchison Range is converted by roasting and volatilisation into white antimony oxide, which is used as a substitute for white lead.

GRAPHITE.

Reference to the accompanying tables shows that the graphite industry is making steady progress, and it is encouraging to find that practically the whole of the South African requirements of the mineral are now being met by the Transvaal Graphite Company, who are exploiting a deposit situated 20 miles east of the Groot Spelonken Siding, in the Zoutpansberg district of the Transvaal.[‡]

IRON OXIDE.

The material under this heading is used in the manufacture of mineral paints, the production of which has become an industry of some importance.

[‡] Cf. Wagner, P.A.: *S.A. Journ. Industries*, May, 1918.
[†] *S.A. Journ. Industries*, February, 1918.

(To be continued.)

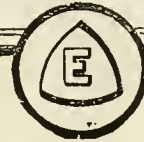
Rooiberg Minerals.

The report of the Rooiberg directors for the quarter ended 31st December, 1918, shows that: Number of stamps, 10; days mill ran (24 hours), 42.98; ore treated including 2,587 tons of stock slime re-treated, 7,147 short tons; concentrates produced, 90 long tons; average assay value of concentrates, 66.62 per cent. M.T.; total expenditure, £18,029; estimated revenue, £15,435. During October and November 2,627 tons of Blaauwbank ore were treated, from which 27.75 long tons of concentrates were produced. The influenza epidemic caused a restriction of work in all departments.

GEORGE ELLISON

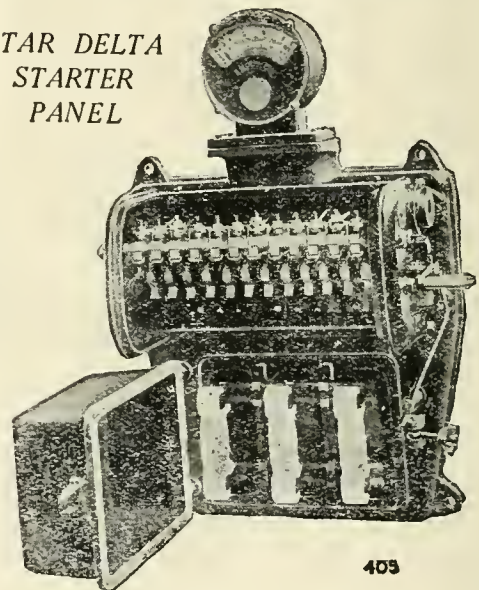
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New Delagoa Bay Water Works.

Mr. W. Ingham is acting as consulting engineer to the new waterworks to be carried out at a cost of £16,000 by the Delagoa Bay Development Corporation.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Buyers Replaced—Dynamite and Gelignite—Important Liquidation—Standardisation Committee—Shipping Activity—Timber Freight Reduced—Stray Notes.

THE return to the pre-war days' system of each group or each mine, as the case may be, buying direct from the merchants through the Commercial Exchange or otherwise is now re-established. This is as it should be, in accordance with the assurances given by the Chamber of Mines; however, they must be congratulated upon doing it so expeditiously. The consequence is that business has been a trifle better owing to the tension being much relieved. In this connection it was mentioned at the Breyten Colliery meeting that it was expected the release of moneys locked up in stores would permit of a reduction of the bank overdraft, which means that the merchants will in the future do the carrying and not the mines. There was a disquieting element that cannot be overlooked in these trade notes, which is contained in the following announcement: "The National Bank of South Africa, on an application made by Mr. Greenberg in the Rand division of the Supreme Court, obtained an order for the provisional liquidation of S. Myers & Co., Ltd., a company formed with a capital of £5,000. In the petition on behalf of the bank it was stated that respondents are indebted to the bank in the sum of £48,048 and that in addition there are contingent liabilities estimated to amount to some £80,000. The value of the security held by plaintiffs was £24,900. Mr. J. G. Carter was appointed provisional liquidator." It appears that this company had an excellent balance sheet up to November 11, when the armistice was signed. The disquieting feature is said to be in the contingent liabilities of £80,000, which is chiefly for goods to come forward from America and overseas, consisting of white lead, turps, carbide, oils, colours, and so forth. The point is that there are heavy stocks in South Africa, which by the way is not an unlimited market, but no doubt as a bank is concerned the liquidator will have facilities allowed not to unduly depress the market. An experienced commercial broker says that more money has been lost since November 11 than in any other one period in the history of Johannesburg. Hence it is not surprising that merchants are frightened to purchase for stock purposes.

EXPLOSIVES.

The British S.A. Explosives Co. has large stocks of dynamite, including fuse and detonators, on hand, sufficient for nine or twelve months. There is no alteration in prices, but it is thought that materials will be easier now that shipping facilities are becoming freer. This it is understood applies to all three S.A. companies. The Transvaal company, with the sanction of the Chamber of Mines, is now manufacturing an efficient substitute for standard gelignite called gelignite "A," which effects an appreciable economy in nitro-glycerine. The explosive force is quite equal to standard gelignite, ammonium nitrate being incorporated to make up for the lower percentage of nitro-glycerine. Although the price of gelignite "A" is the same as standard gelignite, the conservation of glycerine, which is difficult to obtain and constantly increasing in cost, is of paramount importance to ensure continued supplies of explosives. The substitute has been used in several mines of the Rand for some time past and has given every satisfaction.

IRON, STEEL, WIRE AND METALS.

Tin has risen under its free dealings in London to £253 per ton, which is an excellent sign for our tin fields. A speculative dealer is offering 2,000 feet lots of $\frac{3}{4}$ galvanized piping at 6 $\frac{3}{4}$ d. delivered in Johannesburg, owing to its coming from the American shipments at the coast and heavy stocks being already here. There was an easing off in the price of fencing wire a fortnight ago, but it is steadier

owing to overseas values being on the up grade. The best barbed wire is easier at 40s. per roll. The rates for wire nails are:—1 $\frac{1}{2}$ in., 100s. per 100 lbs.; 2 in., 95s.; 3 in., 92s. 6d.; 4 in., 90s.; 5 in., 85s.; 6 in., 50s. to 55s. The dealer was asked for more, when he remarked that the Home cement pipes were beginning to check the demand for anything over six inches. Shovels are the same cost, viz., No. 2 round nose, 85s., and squares, 130s. per dozen. There are not too many in Johannesburg and the mines are said not to be over supplied. There is a big demand for black baling wire, now the season is on at 60s. per 100 lb. coils. According to a representative of a Sheffield firm, there was nothing to indicate any fall in price as many people at one time thought would happen. His firm rather intimated that it may soon become dearer on account of labour demands being uncertain, etc. The ordinary mining drill steel is 10d. lb. The price of iron and steel generally is erratic, as the quantities held by the mines are only roughly conjectured, and again it is difficult to estimate what is on the way from overseas. There are more enquiries for bar iron and mild steel, so much so that a firm dealing largely is buying freely to keep up stocks to supply everyday orders.

OILS, COLOURS, WHITE LEAD, VARNISHES.

White lead is 1s. per lb. for ordinary lines, being practically a fifty per cent. reduction since the armistice. The local cost from merchant to merchant is from 80s. to 90s. per 100 lbs. for the genuine brands, but other brands are said to be on offer by brokers at ridiculously low quotations.

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(Single, Double and Treble)

"Homogene" BRAND Laminated.

"Viking" BRAND Launder Lining.

The latest cable gives the price in London for white lead as £64 a ton, with an expectation of a further advance of 10 per cent. shortly. Other cables say that linseed oil is allowed to come from Britain providing it is included in a general order, also that English varnishes have already left London for South Africa. By the way, it is stated by a man in the trade that it takes four months for the manufacture of white lead and ten to twelve months to mature linseed oil for the commercial market. It is mentioned that Argentine linseed oil is offering in the neighbourhood of 8s. per gall for delivery into Johannesburg. Turpentine is lower at 77s. 6d. per case of 2-4's. In consequence of the uncertain state of the oil and colour market, merchants are difficult about supplying quotations.

STANDARDISATION COMMITTEE.

This committee, now that the chief buying office is dissolving, has become a part and parcel of the Chamber of Mines and will carry out much of the good work already accomplished. It has standardised fireclay muffles, British section of rails, battery cams, shoes, dies, heads, stems, cam shafts, screenings, coarse do., and tappets, Blanton wedges, pipes, both water and steam, electric lamps, grizzly bars and skip wheels, also one other item not issued yet, being still in the printers' hands.

SHIPPING—BIG STRIDES.

It has been officially notified by the Union Castle Co. that five big cargo ships would be leaving England between now and the end of February. It was also especially emphasised that these were cargo ships and not passenger ones. This is anything but surprising, as it was not to be expected that our premier steamship line would lag behind in catering for traffic that it had taken over half a century to build up. Remember that immediately Britain announced its intention to practically free the great majority of ships at the end of February, America also came in and did more by freeing their boats at once. One of our merchants was offered, when at Durban this week, shipping space on a sailer from New York at £7 per ton, which he did not happen to want, and if he had he thought that was not the lowest quotation. The shipping offices and importers seem more surprised about the freedom of shipping coming at such express speed than the man in the street, but it stands to reason that England with all its debts cannot afford to lock up its ships in a glass case.

TIMBER AND GALVANISED IRON.

Here again the shipping rate has been reduced 26 per cent. from the Baltic ports for steamers sailing in February, and although the timber now on the way will come at the higher rates, the South African shippers have reduced values to the present level of the freight rates. The price of deals is 1s. 9d. per foot; floorings, 10½d.; ceilings, 6½d. Business

is slightly better, which it would need to be after such a poor December month. The exchange, after a set-back to 16·70 kroners, quickly recovered to 17·45 as between London and Sweden, therefore the English sovereign is now only about 9d. below par, which is the best touched since pre-war days. The last cable states that there are no more boats advertised to leave the Baltic until February, which is an indication that there is a general slackness in buying from that quarter. As regards American timber, there are several shipments of Oregon pine on the way, otherwise very little actual information is available. Galvanised roofing iron is very stationary as regards values, viz., 1s. 8d. for sixes and 1s. 9d. per foot for other lengths of 24 standard gauge. It was thought that prices would have been cheaper because of English shipments, but this will evidently take some time. Second-hand deals and roofing iron are a penny per foot lower, as stocks are plentiful, but the demand is rather slow, as buyers are still holding back for lower rates. S.A. deals are 1s. 2d. per foot. Mining poles remain as before, with the addition of 10 per cent. for railage.

A FEW STRAY NOTES.

The Pretoria Cement Company is duplicating its plant to cope with present requirements and in view of competition, both South African and overseas. Steel ceilings are again coming into evidence at 75s. per 100 ft. square, including stripping and nails. It is said by an oversea representative that whenever indents are not filled it is on account of the manufacturers being out of the particular lines and that is the leeway they will have to make up. It has been mentioned that British Government-controlled manufacture will advance in price but uncontrolled will go lower, especially those unduly rushed up. The Japanese are adepts at copying, as a label has been noticed "Day and Martin Blacking, made in England." Then in red ink around the tin—made in Japan!

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Engineering Notes and News.

REPORT ON ECONOMIES IN MINING ENGINEERING SUPPLIES.—II.

Points from Statement Prepared by Mr. W. Elsdon Dew.

23. *Rock Drill Parts.*—(I.) Rock drill parts are extensively made on the mines, resulting in considerable economy as instanced by a statement from Nourse Mines, Ltd. A recent lot of rock drill parts made on that property would have cost to buy £118 15s. Making this lot, using two-thirds scrap and one-third new material (taken at current prices) with labour, tools and power, cost £51 1s. 7d. Several mines are stamping swivels and crowns out of odd scrap. At Ferreira Deep, Ltd., it is stated that one smith can make 70 to 80 of them per shift, so that the cost cannot be more than 2s. or 3s. Consolidated Main Reef, Ltd., state with new material at present prices, the cost to be 6s. each. The market price to-day is 13s. 6d. each. These mine-made fittings stand up to the work equally as well as the imported parts, and their manufacture is particularly creditable seeing that numerous jigs and methods have first to be thought out. Bantjes Consolidated Mines, Ltd., find making own "U" bolts great saving. Durban Roodepoort Deep, Ltd.: Can be made to certain extent, but doubtful if as good as imported. Made chuck keys in white iron at 1s. each. Drop forged ones cost 5s. 6d. each, and answer very well. Goldenhuis Deep, Ltd.: Rock drill parts made for years, for instance, air chests cost about £9 each. When worn out re-bore and screw them and make two plugs to suit at cost of 12s. each. Air chests then as good as new. East Rand Proprietary Mines, Ltd.: Made from old scrap, i.e., rails, grizzlies, broken pistons, etc. Following list of articles mine makes (d.f.=drop forging):—Side rods, arm and clamp bolts, crossheads (d.f.), spanners (d.f.), cradle liners, cradle pillar tubes, chuck wedges (d.f.), chuck bushings (d.f.), rotating handles, stoping bar nut, air lap handles (d.f.), feed screen supports, valves, valve stoppers, valve plates, tappets (d.f.), cylinder bushings, ratchet springs. Ratchet springs made from new piano wire at ½d. each. Makers' price, 8d. each. Have surplus of crowns and swivels due to reducing number of reciprocating machines. Making rock drill parts valuable economy. Made parts before and since the war. City and Suburban G.M. Co., Ltd.: Made crown, swivels and jacking screws before the war, but machine tools have been too busy since. City Deep, Ltd.: In use before the war (spares, crossheads, "U" bolts, spanners, etc.). Consolidated Main Reef, Ltd.: Swivels and crowns made of broken stem-ends at cost of 6s. each (against 13s. 6d. imported). Equally good. New idea. Crown Mines, Ltd.: Considerable quantity made on mine, resulting in great economy. Robinson G.M. Co., Ltd.: Make lot of hammers for B.C.²¹ rock drills from old stem pieces. Life three to five months. Better than imported. (II.) Utilising worn out pistons of the larger sizes of rock drills for the smaller sizes of drills.—A scheme recently introduced by engineer of the Village Deep, Ltd., is effecting a considerable saving as regards rock drills on this mine. The old pistons of the 3¼ in. Ingersoll machines are swaged down sufficiently to allow of the old spring recesses being turned off, and by closing the hole, it allows of boring and screwing to fit the standard riddle nut. The piston is then turned to 2½ in. diameter and used with the 2½ in. Holman machine. Just at the present time the largest sized pistons for these machines are not obtainable here, so by this use of the discarded pistons from the large machines, the life of the cylinders of the smaller machines can be extended in the usual way, as also can the front head bushing, since the rod of the 3¼ in. machine is larger in diameter than that of the 2½ in. machine. Most of the mines have a number of these discarded pistons, and in many cases it is true that these are being used for other purposes, but if they could be adopted for the smaller machines an appreciable saving in rock drill spares would be effected. The present day cost of a piston for a 2½ in. machine is £7 11s. 9d., and the front head bushings 15s.,

as against the cost of 14s. for swaging down, turning piston and rod, boring front head lines, besides the further life of the cylinder which costs £8 1s. 8d.

24. *Foundry.*—The engineer of the Robinson Gold Mining Company, Ltd., supplied some interesting figures regarding the foundry that has been run on that property for the last 28 years. For the twelve months ended October last, the output of iron castings was 66 tons, worth £1,930 at current rates and 7½ tons of brass castings, worth £1,857, that is castings to the value at current rates of £3,787 were made on the mine instead of being bought. Excluding the value of scrap used, the cost of producing these castings was approximately £1,500 including a certain quantity of new pig iron, coke, and wages of workmen, seven in number, namely, one pattern maker, two moulders, one apprentice and three natives. Apart from the direct saving in making castings on the mine, the value of the time saved in repairing breakdowns must be very considerable. East Rand Proprietary Mines, Ltd.: Brass work large factor. Have brass foundry and do all own castings in brass, aluminium, gun and acid resisting metal, which includes large spares for Sulzer underground pumps. Castings amount to 4 tons per month. Since the war have made white metals for own use, totalling 53,000 lbs. Castings, white metal and solders resulted in large savings. Make own solder. If work sufficient and continuous, foundry is useful and economical asset, and more so for emergency work.

25. *Rock Drill Steady.*—"Nettle's Patent Rock Drill Steady," devised at the Ferreira Deep, is an attachment for a hammer drill to keep steel in place when collaring a hole. When one considers the difficulty of collaring a hole with a hammer drill, and the damage to steel in the process, the idea strikes one as being a good money saver. This attachment is being tried on many mines.

26. *Jenkin's Detachable Bit.*—Jenkin's City Deep "Detachable Bit," better described perhaps as "jointed steel." A substantial joint in the drill at about 18 in. from point enables one shank to be used for many drills. To equip our Ingersoll machine in the ordinary way, 40 drills are required, having a total length of 211 ft. and weighing 917 lbs. With Mr. Jenkin's method, 40 drills are required having a total length of 70 ft. and four shanks of a total length of 15 ft., drills and shanks weighing together only 317 lbs. Sharpening the ordinary drills involves handling about 900 lbs. of steel as against only about 300 lbs. with Mr. Jenkin's process. Compared with the ordinary equipment of a drill Mr. Jenkin's method introduces two important economies: (1) The steel required for a new machine is reduced by 62 per cent., or, say, two-thirds. (2) The weight of steel to be taken in and out the mine every day is reduced by 68 per cent., just over two-thirds. These possible economies are sufficient to warrant the method being given a thorough trial on other mines. Mr. Pryce's report, dated the 25th September, 1917, dealing with a test of this jointed steel over a period of 15 months, indicates that the miners prefer this jointed steel to the old type. Crown Mines, Ltd., has cheapened the making of these drills by new method. The sockets are made entirely on the Leyner sharpener at the rate of 40 per hour. The inside of socket is formed in three heats with a first, second and finishing dolly, this last dolly giving the socket the exact taper and depth required. The socket is then given a fourth heat, plugged, and finished off in a former on the outside. They are stronger than those having sockets first bored out by lathe. The improvement of Crown Mines' method very marked.

27. *End Liners for Tube Mills.*—It has become a general practice to make tube mill end liners from old shoe shanks or grizzly bars. Ferreira Deep, Ltd., state two men will

make two complete end liners in three days. City and Suburban G.M. Co., Ltd., give cost of liners for one end at £3 5s. 6d. City Deep, Ltd.: Old dies are used as tube mill ends, which give about 9½ in. end at a cost of 30s. for installation. This end has been running for over 12 months. Village Main Reef G.M. Co., Ltd.: Custom here to build in shoe shanks without dressing; cheap and efficient.

28. *Oxy-Acetylene Welding*.—This process is in use on several mines for welding up broken castings, cutting up girders and plates, etc., and it appears to me that the system could be adopted with advantage on other mines. An apparatus with a capacity for welding up to 2 in. and cutting plates 6 in. thick costs £120. Bantjes Consolidated Mines, Ltd.: Sirius plant imported and installed in 1912. Use has been enormous and small capital outlay been saved many times over.

29. *Plates*.—The engineer of the Goldenhuis Deep, Ltd., uses a steel railway sleeper flattened out, which makes a good plate, 6 ft. x 13 in., at a cost for labour of 1s. 6d. These plates are used for lining bins, repairing truck bodies, etc. Ferreira Deep, Ltd., find them excellent for footwall chutes. The construction of chutes is worth noting, the timbers being wedged together so as to be readily changed. A good deal of plate for lining bins, repairing truck bodies, idler ends and other purposes is obtained from odd bits of pipe flattened out.

31. *Rails and Crossings*.—Several mines are making switches and crossings. In December, 1916, the Modderfontein B. Gold Mines obtained quotation for 30 in. gauge crossing, 15 ft. long of 30 lb. rail. The price quoted was £14 15s. To-day these crossings are made on this mine at a cost of £9 15s. with piece work labour at 27s. 6d. per crossing and material at current prices. Nourse Mines, Ltd., gives cost of 12 ft. switch of 30 lb. rails at £9 3s., using sleepers of old bin lining costing 1s. 6d. as against market price 2s. 7d.

32. *Idlers*.—(I.) Rope idlers: City & Suburban are making rope idlers. The centre for rope is an 8 in. diameter cast iron collar costing 4s. 3d., and the ends of plate stamped out from scrap in a die. The roller turns on 1¼ in. steel shaft pinned in bracket at each end. A recess around spindle in centre is filled with C.C. motor oil, which is found to last the life of the C.I. centre. The cost is £1 17s. 6d. complete. The cost of replacing a worn C.I. centre is about 6s. 6d. (II.) Conveyor belt idlers: Knight Central make from short length of 4 in. pipe fixed to 1 in. shaft, and run in ordinary bearing.

33. *Springs for Leyner Sharpener*.—East Rand Proprietary Mines, Ltd., have made springs for Leyner drill sharpener from rope, at a cost of 2s. to replace those bought at 6s. 6d. each. Many of the mines are now making these. East Rand Proprietary Mines, Ltd., made out of old wire rope, and have proved satisfactory. Cost is 5d. compared with purchase price 5s. 11d., which is valuable economy. Average life of springs made here is fourteen days as against three days' life of original spring.

34. *Metallic Packing*.—The Knight Central has a process for making the metallic packing fit some engines. As the material costs only about 10s., it is obviously cheaper to make the packing than pay the market price of £4 per 1 in. diameter of rod, say, £16 for 4 in. piston rod packing. East Rand Proprietary Mines, Ltd., cast and machine all own metallic packing, and adopt it wherever possible. Made 1,300 lb. since war. Is a valuable economy. Metallic packing as adopted on first class locos. is the best. Great success under unfavourable conditions such as sandstorms and irregular supervision.

35. *Trucks*.—In response to a demand for something that would not break, the foreman smith at Consolidated Main Reef Mines and Estate, Ltd., got out a truck frame of Jarrah 4 in. thick, bolted up with scrap plating, at a cost for labour of 22s. It certainly looks a strong job. The Ferreira Deep, Ltd., also are making truck frames of Jarrah. The cost of labour is stated to be 25s. Crown Mines, Ltd.,

are trying wooden truck frames as used at Roodepoort United; also old frames reinforced with wood. Latter idea may be cheaper.

36. *Truck Axles*.—Satisfactory truck axles are being made of wire rope welded up and other scrap material. Durban Roodepoort Deep, Ltd., made on mine from broken stem ends welding up two old axles to make one new, small pieces of cam shafts or any other shafting. Made some more as an experiment from old wire rope welded together. East Rand Proprietary Mines, Ltd.: Welding up wire ropes is new. Our practice to weld wedge pieces into end, thereby renewing them, and is valuable economy, as body of axle is saved. Have practised this since war began. City and Suburban, Ltd.: Welding up scrap in furnace for truck axles with good results.

37. *Truck Trunnions*.—Truck trunnions are being made from scrap at a price that indicates a saving. East Rand Proprietary Mines, Ltd.: Drop forged from scrap. Valuable economy; practised since war. City and Suburban, Ltd., made them in dies out of scrap for seven years.

38. *Truck Wheels*.—Truck wheels are mostly discarded through flanges wearing out. Several mines are shrinking on steel flanges at a cost stated to be 4s. This is perhaps a low figure, seeing that the old flange has to be turned off and a ring turned up and shrunk on. The City and Suburban re-flange old wheels by placing a hot wheel in a die under the hammer and bringing up a new flange out of the metal of the wheel. This method slightly reduces the width of the tread, but makes a good job. The cost is given at 2s. 6d. per pair.

39. *Sanitary Buckets*.—Imported sanitary buckets being no longer procurable, several mines have met a shortage by making them. It appears that a bucket of 18 in. gauge flat galvanised iron can be made at a cost of about 15s. exclusive of lid. The New Modderfontein G.M. Company are making sanitary buckets costing approximately 20s. This pattern is now being largely used on other mines.

40. *Tools*.—Most of the mines are making tools of a variety that would stock an ironmonger's shop, comprising every description of blacksmiths' swages, hammers, zinc lathe tools, ordinary lathe tools, chisels, spanners, pipe wrenches, etc. An important item is dies, dollies, and formers for drill sharpening machines. The comparative costs of making and buying are stated by Mr. Ritchie to be, on the Nourse Mines: 2 dies, to make, £2 13s.; pre-war price, £3 10s. 1 dolly, to make, 17s.; pre-war price, £2. 2 formers, to make, £1 10s.; pre-war price, £7 10s. Excel-lent 4 lb. and 11 lb. hammers are being turned out at a cost of about 4d. per lb. from shoe shanks, and other scrap material comparing favourably with imported hammers at 6d. per lb. (price, December, 1916). Bantjes Consolidated Mines state that one smith and two natives can make 25 4 lb. hammers per day, indicating a labour cost of 2½d. per hammer. City and Suburban state inclusive cost of 4 lb. hammer to be 8½d. and 14 lb. hammer at 3s. 3d. The City Deep make a very serviceable pipe wrench from old grizzly bars. Bantjes Consolidated Mines, Ltd.: Number of all descriptions made, particularly dies and dollies for drill sharpening machines (Leyner) which cost less than present market price. Durban Roodepoort Deep, Ltd.: Smiths' tools, drifts, etc., have been made past eighteen months from old 1¼ in. rope, and anything up to 2 in. round can be made from this material. Cost of 4 lb. hammer seems low. Nourse Mines, Ltd.: Stilson wrenches are being reclaimed, and by the introduction of new jaws and springs turned out as good as new. East Rand Proprietary Mines, Ltd.: Two men constantly employed keeping workshop tools in order and making tools at present unobtainable. Also make dies, dollies, etc., for Leyner drill sharpener. No new hammers made. Old hammers dressed and faced. Decided economy on work done in pre-war days. Cast steel tools made of old shoes. Timbering chisels made out of hand and machine drill steel. City and Suburban, Ltd., have made most of dies, dollies and formers ourselves, since we had sharpening machines. During last eighteen months have made

zinc-cutting tools from old shoe-shanks. Some 6,000 4 lb. hammers made from old shoe shanks. City Deep, Ltd.: Wire rope handles used in 14 lb. hammers for mine use. Consolidated Main Reef, Ltd.: Smith tools always made. Dollies for Leyner's all made on mine. No new hammers made, but old ones re-dressed.

42. *Waste*.—One of the mines has for some time been using old hemp ropes, teased out, as a substitute for waste. Some of the mines are cleaning waste, but the recovered waste has little value. It has been suggested that sweat cloths are more economical than waste, being more easily recovered and cleaned.

43. *Steel Belt Fastener*.—Knight Central, Ltd., suggest using these a second time by burning out old belt and straightening out fastener. This can easily be done by a native.

47. *Pump Details*.—R.D. pump: Repaired worn part of pump shaft. Shaft worn usually at the gland is turned, tinned and run with brass in a mould. Then the brass section is turned in the lathe, and saves scraping the shaft. Tried in brass and white metal. No results available, being experimental stage. Experimental Plunger Casing: Suggest use of granite casing for plunger which being impervious to water with a high polish should reduce friction, and not likely to groove owing to hard skin. Worthington pump: Bantjes Consolidated Mines suggest lead ring substitutes in place of red fibre joints as supplied by makers for 4½ in. x 10 in. Worthington pumps. The valve covers on these pumps have to be removed frequently to examine valves and seats, and make renewals when necessary. Red fibre makes a good joint so long as it is not disturbed, but with repeated removals of cover they soon collapse. They are expensive to produce as the fibre is bought in the sheet (¼ in. thick), cut up into suitable squares by band saw and then sent to lathe to be turned up on the outside and through

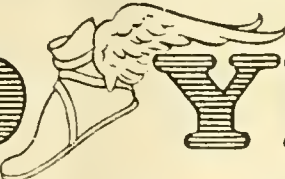
hole bored from solid. Lead rings make quite as good joints for these particular pumps (or anywhere where a recess can be provided for joint). The advantage of this is that when the joint is discarded the old ones are brought back to shop and melted up and re-run into jig. An apprentice can comfortably run up 300 joints in one shift—red fibre 50 for a shift. When melted lead has been run in recess "C" in jig, the whole jig is lifted by handle and dropped on a block of wood. The bottom of solid mandril "A" strikes the wood first which causes "A" to rise, leaving the lead ring still resting on mandril "B" as the jig still descends mandril "B" then gets the blow which causes lead ring to be knocked out of mould. Sulzer pumps: Durban Roodepoort Deep, Ltd., have adopted a front packing bush of white metal which runs well and reduces the danger of seizing when pumping dirty water. The bushing, when worn, can be readily melted and run up again in a cast iron mould.

49. *Quasi-Arc Welding*.—Crown Mines, Ltd., report many big jobs satisfactorily repaired, most useful in building up badly worn shafts, in journals or shafts of winding engines on which the coupling of main spur-wheel has become slack.

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THE RAND WATER BOARD VERSUS V.F.P. CO., LTD.

History of the Dispute Over Vaal River Water Rights.

THE Rand Water Board and the V.F.P. Co., Ltd., are at loggerheads over their respective rights to the water of the Vaal River. The Rand Mines Power Supply Company, Ltd., has formally notified its intention to introduce a Private Bill into the Union Parliament this session, with a view to obtaining the right to use, for the purposes of the company's power station at Vereeniging, the water to be impounded by the Rand Water Board in the Vaal River under the powers conferred upon it by Act No. 18 of 1914. Negotiations, having as their object the obtaining by the Company of the facilities it requires in regard to the use of the water in the Vaal River for purposes incidental to the operation of its Vereeniging Power Station, have been proceeding during the past four years. At the beginning of this year the conclusion was arrived at that the only satisfactory means of obtaining the powers required by the Company would be by legislation promoted by the Board. This view was held on behalf of the Board, for the reason that it was the duty of the Board to protect the interests of its Constituent Authorities, not only as regards the terms upon which the Company might be permitted to use the water in the Board's reservoir, but also in regard to the method of obtaining Parliamentary sanction to any such arrangement. In the circumstances, it was felt that the Board should secure Parliamentary powers to enter into agreements, not specifically with the Victoria Falls Company, but with any industrial concern desirous of obtaining beneficial use, for tertiary purposes, of the water stored by the Board for its own purposes. Accordingly, the following resolution was adopted by the Water Board Standing Committees at their meetings in January last:—"That, in view of the advisability, in the interests of its Constituent Authorities, of the Board retaining full control over its storage works in the Vaal River, and in order to place the Board in a position to negotiate, not only with the Victoria Falls Power Company, but with other parties desirous of obtaining, for tertiary purposes, beneficial use of the water stored by the Board in the Vaal River, the Board should adopt the principle that the Board should obtain the necessary statutory powers in this matter." To this course the Power Company agreed, subject, however, to the following conditions:—(a) The additional powers referred to shall be in respect of water stored by the Board for its own purposes, and shall not affect the quantity of water to be impounded for the benefit of the owners of land riparian to the Board's reservoir; and (b) Before any steps are taken to obtain Parliamentary sanction "a definite and concluded agreement" be entered into between the Board and the Company in this matter. In accordance with condition (b), the Water Board Standing

Committee considered the terms upon which the Power Company should be granted the facilities required, and in August last the more important terms and conditions to be embodied in the agreement were submitted to the Company. According to the Water Board version, the Company did not at any time thereafter approach the Board for the purpose of discussing those conditions, and the following letter was received from the Company on the 23rd October:—"With further reference to your letter of the 19th August last, we have now to state that after due consideration our Company has come to the conclusion that the offer therein made is entirely unacceptable, and that it has decided, under advice, to take steps to obtain the necessary statutory powers authorising it to use the water of the Vaal River for cooling, condensing and other purposes incidental to the running of the Power Station. Due notice will be given of its intention to apply for leave to introduce a Private Bill for the purposes aforesaid." The terms of the Private Bill to be introduced into the next session of Parliament by the Power Company were very carefully considered by a Sub-Committee appointed by this Committee in November last. This Sub-Committee has reported that, as the Board's existing rights to store water in the Vaal River and to abstract water therefrom would be seriously interfered with if the Bill became law, the only course open to the Board was to notify its opposition to the Bill, and to take the necessary steps to be heard by the Select Committee to be appointed by Parliament on the introduction of the Bill into the House of Assembly. The provisions of the Bill as a whole are stated to be a direct challenge to the powers vested in the Board in respect of the Vaal River Scheme, as contained in the Board's Private Act No. 18 of 1914. Both parties are now represented at Capetown, where the matter is to be threshed out in the Union Parliament.

Bwana M'Kubwa Copper.

The ordinary general meeting was held on December 3, at the Cannon Street Hotel, Cannon Street, London, E.C. Mr. Robert Littlejohn, the chairman, said that last year the expenses at the mine, including depreciation of the plant, were considerably more than the net proceeds of the concentrates produced; but we must remember that for about three and a half months of our year no production was obtainable, while considerable costs at the mine had to be incurred. Last year working costs and stores of all kinds were exceptionally high; freights, too, when obtainable, were very heavy. Conditions in these respects were, perhaps, at their very worst last year. But, all the same, it is still the case, as I said last year, that until we get installed and put into operation at the mine a plant and treatment process capable of dealing profitably not only with the higher grade but also with the lower grade ore of the mine, we cannot have satisfactory results. Development work, in fact all work on the mine, has been suspended, or, at any rate, reduced as far as possible, except essential work and work in preparation for and in connection with the installing at the mine of a working unit of the Minerals Separation, Ltd.'s, plant, capable of dealing with 100 tons of ore a day by that company's new process, of which I told you last year. We were hopeful then that the agreement with the Minerals Separation, Ltd., would be completed, and their men and material to instal and operate the plant would be on their way to South Africa early this year. But the difficulties to be overcome in connection with the matter were many, and it was only in October last that everything was shipped and the Minerals Separation, Ltd.'s, representative was on his way to South Africa. The plant and process should be in operation at the mine early next year, and as soon as the trial tests have been proved satisfactory arrangements will be made for the gradual extension of the plant from the original capacity of 100 tons of ore per day to a capacity of 500 tons per day. Then, but not till then, I suppose, can we look to the mine being operated as a satisfactory paying proposition. I may mention as indicative of the Minerals Separation, Ltd., people's confidence that satisfactory results will be obtained, that they stipulated for, and have been given in the agreement with this company as one of the considerations for installing their plant at the mine and for the use of their process by this company, an option with certain provisos for three years from the date of the commencement of working on 100,000 of this company's shares at par (10s. each).

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

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Notes and News.

According to the analysis issued by the Chamber of Mines for December, the yield of gold per ton **Rand Yield, Costs** from the Rand in 1918 was 27s. 11d., and **Prolits in 1918.** as compared with 27s. 1d. for 1917. Costs, however, were 21s. 7d. as against 19s. 2d. for the previous year, and the working profit per ton was only 6s. as against 7s. 6d. per ton for 1917. The total Rand working profit for 1918 was £7,500,270 as compared with £10,225,638 for 1917, and of this £5,144,077 was distributed in dividends for 1918 as against £6,556,188 for 1917.

According to the statement issued by the Mines Department, the total value of the minerals **Decreased Mineral** produced in the Union during the past **Output for 1918.** year was £47,219,533, which is £3,982,834 less than the total for 1917. The totals for gold, silver, diamonds, coal and base metals are as follows:—Gold, £35,758,316; silver, £158,815; diamonds, £6,961,062; coal, £3,247,668; copper, £358,627; tin, £447,952; other base metals, £287,093. The following are the principal decreases:—Gold, £2,549,359; diamonds, £775,309; coal, £7,991.

As a result of lengthy negotiations, the directors of the Consolidated Mines Selection Company have concluded the purchase **Cons. Mines Selection** from the Public Trustee in England **and Enemy Shares.** of the whole of the enemy shares in the company vested in him. The number of shares in question is 276,547, and these the directors have decided to offer to shareholders in the company, with the exception of enemy shareholders, at the price of 25s. per share net, that being the approximate cost to the company after allowing for expenses in connection with the acquisition and transfer of the shares, including stamps and fees. Shareholders will be entitled to purchase, at the price of 25s. per share, one share for every three held by them at the close of business on January 27. Fractions of shares shall not be considered. The directors are further prepared to consider applications from shareholders who wish to apply for shares in addition to the *pro rata* to which they are entitled as indicated above. Such applications will be dealt with at the entire discretion of the directors.

As a result of its operations for the twelve months ended June 30 last, the South African Diamond **S.A. Diamond** Corporation distributed its first dividend **Corporation.** of 7½ per cent. in September, and, as the chairman remarked at the recent meeting of shareholders, it was paid in spite of the war, and not because of it. "Our profits do not arise from war industries, and if we are therefore in the position to-day to earn dividends, it is safe to assume that with the resumption of peaceful occupation after the war we shall reap the benefit by being enabled to extend our operations." A second dividend of 7½ per cent. is now declared, and as it is described as "interim" it may be inferred that the progress to which reference was made at the meeting has more than continued, for interim disbursements are usually on a conservative scale. A total of 15 per cent. within a period of four months should satisfy shareholders. The diamond market has, of course, as the foregoing indicates, and the latest cables from London confirm, benefited by the policy of regulating sales.

It is our intention to alter, at an early date, the title of this paper to "*The S.A. Mining and Engineering Journal*," in order to indicate **Change of Name.** and emphasise the larger measure of attention that will in future be devoted to general engineering. Further notice will be given of the contemplated change.

The report and accounts of the Southern Van Ryn Reef G.M. Co., Ltd., show that the company at the end of the financial year to October 31, 1918, had on hand a cash balance of working capital amounting to £42,441 14s. 10d. The issued capital of the company is £285,000 in shares of £1 each. The property consists of 1,661 claims on Varkensfontein and Draaikraal and is put in at £124,459 in the balance sheet. Commission account is debited with the sum of £63,386 15s., described as "rebate on certain shares issued by the company." Against this the total spent on equipping the property, including shaft sinking and boreholes seems comparatively trifling at £8,886 9s. 4d. Mr. C. D. Leslie, the consulting engineer, in his report, writes regarding the operations on the company's property during the year ended 31st October, 1918: "No. 4 borehole, which has been stopped at a depth of 1,558 feet, was continued to a total depth of 2,860 feet. At a depth of 2,801 feet reef in contact with shale was encountered which gave the following assays: No. 1, hanging wall quartzite, width 1 in., value 0.2 dwts. per ton; No. 2, banket reef, width 2 in., value 0.5 dwt. per ton; No. 3, banket reef, width $\frac{1}{2}$ in., value 1.0 dwt. per ton; No. 4, shale, width 2 in.; value nil; No. 5, shale, width 2 in., value trace; No. 6, shale, width $1\frac{1}{2}$ in., value trace. On account of considerable grinding of the core at the reef-shale contact it cannot be said that a full reef section was obtained. In appearance and value the section recorded above is similar to sections frequently met with between pay shoots in Sub Nigel development. No. 1 borehole was restarted from a depth of 667 feet, and at the close of the financial year reef had not been encountered. Since that date the borehole was continued to a depth of 2,601 $\frac{1}{2}$ feet, reef being disclosed at a depth of 2,551 feet giving the following assays: Top section, hanging wall quartzite with small banket matter, width (corrected), $1\frac{3}{4}$ in., value trace; middle section, banket, width $1\frac{3}{4}$ in., value 2.5 dwts.; bottom section, banket, width $2\frac{1}{4}$ in., value 2.7 dwts.; below contact, shale, width $1\frac{1}{2}$ in., value 3.2 dwts.; total, width $7\frac{1}{4}$ in., value 2.1 dwts. The reef resembles that Sub Nigel. The continuation of boreholes Nos. 1 and 4 was for the purpose of determining reef horizons as a guide for shaft sinking which can now be proceeded with. The property is situated in line with the course of enrichment upon which the most valuable mines of the Far East Rand are situated, and in my opinion the prospects for development are favourable."

* * * *

The Special Order by Sir Douglas Haig published in *The Times* of December 5th, and set forth below, is of great interest to mining engineers in view of the large number who have served in the Tunnelling Companies:—

A large number of men are now being withdrawn from Tunnelling Companies for urgent work at home. Before they leave the country I wish to convey to the Controllers of Mines and to all ranks of Tunnelling Companies, both Imperial and overseas, my very keen appreciation of the fine work that has been done by the Tunnelling Companies throughout the last four years.

At their own special work, mine warfare, they have demonstrated their complete superiority over the Germans, and whether in the patient defensive mining, in the magnificent success at Messines, or in the preparation for the offensives of the Somme, Arras and Ypres, they have shown the highest qualities both as military engineers and as fighting troops.

Their work in the very dangerous task of removing enemy traps and delay-action charges, on subways, dug-outs, bridging roads, and the variety of other services on which they have been engaged, has been on a level with their work in the mines.

They have earned the thanks of the whole Army for their contribution to the defeat of the enemy. Their fighting spirit and technical efficiency has enhanced the reputation of the whole Corps of Royal Engineers and of the Engineers of the Overseas Forces. I should like to include in the appreciation the work done by the Army Mine Schools and by the Australian Electrical and Mechanical Mining and Boring Company.

The Institution of Mining and Metallurgy has been appointed by the Ministry of Labour the central authority to select the "pivotal" men to be released under the scheme of prior demobilization in so far as it affects professional men of the metal mining and non-ferrous metallurgical industries. This will enable employers, on application, to obtain the release at the earliest date possible of previous members of their technical staffs. The Institution has already prepared lists showing the experience and qualifications of members of the profession who are, or have been, serving with H.M. Forces. This information will enable the Institution to serve as a centre to introduce technical men to those who have positions to offer. Employers will be invited to take advantage of this opportunity to secure the services of qualified men.

* * * *

The Sheba report for the year to June 30 last states that in accordance with the circular issued in February last operations were duly suspended and adequate steps taken for the protection of the property, plant, and machinery. The realisation of stores on hand has been proceeded with and satisfactory prices for the various items disposed of have been obtained. During the year under review 47,034 tons of ore were treated, which, inclusive of the final clean-up, yielded gold to the value of £62,442. Development and exploration was carried on until the date of closing down; the total footage developed was 2,396.5 ft. at a cost of £7,197. The estimated ore reserves at the date of closing down were 58,023 tons, average value 7 dwts. In addition to the above it is reasonable to assume that at least 2,000 tons have been opened out in the aerial gear fracture but owing to the irregularity of the values the tonnage cannot be definitely given. According to the latest information there are indications of payable ore again being encountered when normal conditions prevail and arrangements can be made to provide the necessary funds required for development purposes.

* * * *

Major Karri-Davies writes to the American papers on the gold question as follows:—Mr. H. C. Hoover was able, in conference with the Allies, to arrange a common breakfast-table whereby we share and share alike.

Why not have a financial conference of the nations, arrange to throw the war debts into a common pot and evolve an equitable basis for liquidating it? Before this is done war indemnities should be arranged and settled on existing gold-values. The Financial Conference would hold full power from the respective governments and would bind them by acts of the Conference. At this Conference it should be agreed: 1. The governments would guarantee to pass legislation calling in all gold by a certain date against which they would issue government securities. This law would be most stringent, imposing heavy penalties and confiscation for non-delivery of gold to the respective governments. 2. The new standard value of gold would be fixed by the Financial Conference of the Nations. It might be \$40 per ounce, or any other figure that the Conference in its wisdom decided; provided it was accepted by the world, the figure would not matter. If it was fixed at double what its value is to-day the governments, after collecting the gold reserve, would re-mint the gold so that a gold coin would represent twice as much paper currency as it does now. This would cut the margin in half. The Conference would fix the actual size and weight of the coins. The greater the lessening of the margin between the gold dollar in reserve and the paper currency issued, the sounder would be the safety of the world's finance. This readjustment would automatically give the impetus needed for gold-mining production. If the new legislation favoured gold mining too much, other legislation could be framed on a sliding scale whereby the gold mines could proportionately contribute to the liquidation of the war-debt. Under no circumstances would there be any reason to curtail the gold output, as the discrepancy between gold and paper will not be sufficiently reduced for generations.

The death took place at Capetown last week of Dr. Corstorphine, Principal of the School of Mines and Technology, Johannesburg. Dr. **Dr. Corstorphine.** George Stewart Corstorphine was born in 1868, being the eldest son of John Corstorphine, of Edinburgh. Deceased was educated at the Universities of Edinburgh and Munich. He was Baxter Scholar in Natural Science, Edinburgh University, in 1892, Falconer Fellow in Geology and Palaeontology, 1892-95. He acted as assistant to Dr. James Geikie, Murchisonian Professor of Geology, Edinburgh, 1892-94. In 1895 he was appointed Professor of Geology and Mineralogy, South African College, and Keeper of the Geological Department, South African Museum, Capetown. He was Director of the Geological Survey of the Cape Colony, 1896-1902. He became Consulting Geologist to the Consolidated Gold Fields of South Africa, Ltd., 1902-8, and was in private practice 1908-12. He was appointed Principal of the South African School of Mines and Technology in 1913. He filled the position of President of the Geological Society of South Africa in 1906, and was hon. secretary 1910-15. He was the author of numerous scientific publications, and his death is a great loss to the scientific world in South Africa.

* * * *

Great interest has been aroused by the proposal of the Minister of Reconstruction in England to give shares to workmen in the companies by which they are employed. **Profit Sharing for Mine Workers.** The suggestion is not original, but, before the war, it would have been put on one side as impracticable. With many people the belief prevails that there is impending a war between capital and labour, the issue of which is pretty sure to be disastrous for both. How to prevent that war must be a problem to which every thoughtful man must desire to contribute. No suggestions to that end should be rejected, but every possible solution receive the utmost consideration. That any plan can be proposed which will satisfy everybody is out of the question. The proposal now submitted, of giving shares to workmen has, in fact, been adopted by many companies in the past, but not always has the plan worked well, so that, more often than not, it has fallen into desuetude. Profit sharing has been more successful, and some notable instances might be cited showing that this has been perhaps more conducive to harmonious relations between employer and employed even than share giving. If shares were issued to workmen, the question of terms would arise. Would he own these shares outright or only so long as he remained in the employment of the company that issued them to him? Would he be called upon to pay anything for them? Would he have the right of sale? Would he have the same voting power as an ordinary shareholder who subscribed originally or who subsequently bought his shares on the market? Would the same number be allotted to each workman irrespective of merit, efficiency, and years of service. What would be his position in the event of a reconstruction? In a word—could a workman who had received his shares by favour and the profits appertaining to them whilst these were made, escape liability when these profits ceased or when the company was passing through a bad time? Suggestions can easily be made; but difficulties arise when working out details. Last, and perhaps most important of all—what would be the attitude of Trades Unions to such a proposal? Would it be hostile or favourable? The whole question bristles with difficulties, but is still worth careful consideration.

* * * *

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

TOPICS OF THE WEEK.

THE MENACE TO INDUSTRIAL PEACE.

THOUGH outwardly all is quiet in the mining industry—apart from vague talk of a "suspended strike" based on an imagined grievance at the ever-troubled Randfontein—there seems to be some danger that the men on the mines may be dragged into the quarrels of the building and municipal engineering trades through the medium of the so-called "sympathetic" strike. As the unions now at loggerheads with their employers are affiliated, like the Mine Workers' Union, with the Federation of Trades, the possibility of a "sympathetic" or even of a general strike—that is, war on the general community—is not so remote as many imagine. Nor is that possibility lessened by the fact of widespread industrial unrest in Europe, however much conditions there and here can easily be shown to differ. Again, it cannot be gainsaid that there is uneasiness—whether real or simulated, we do not know—on the mines among the temporary men taken on during the war regarding unemployment. Up to the present—unless we except the excellent initial work of the new Advisory Board—neither the State nor the general community—which are at least as much concerned as the mines—has worried much about extending the field of employment; and neither is likely to do so until, or unless, startled out of its apathy by news of more or less serious industrial unrest. The extraordinary thing is that unrest on the mines is accompanied by a degree of inefficiency never, we believe, equalled before in the history of the Rand, and that inefficiency is most marked on those mines where the unrest is most pronounced. For instance, the Inspector of Mines on the West Rand, in his last annual report says very bluntly: "There is probably a larger percentage of inefficient workmen on the West Rand than in any other district. This fact, combined with the present sensitiveness of the unions and the uncertainty of the outcome when a real or fancied grievance is put forward, makes the lot of the mine official a most difficult one, and he has to use a great deal of tact, and often must overlook small offences or ask as a favour the performance of some duty which he has a right to demand. Consequently, supervision is not always as strict as it should be." In these few sentences, we believe are summed up the experiences of the majority of the mine managers on the Rand to-day. They were strikingly confirmed by the President of the Chemical, Metallurgical and Mining Society the other day in the following incisive remarks that are too true to be quickly forgotten: "From the employee's standpoint," he said, "the Witwatersrand can well be called 'The Mining Utopia.' Is he, however, giving a fair return for these exceptional conditions? I am in a position to follow efficiency returns from a large number of mines, which, taken as a whole, can safely be regarded as representing average conditions along the Reef; the disconcerting feature revealed by such figures is, that in spite of unlimited expenditure on improved appliances, on lavish living conditions, on better educational and training facilities, and finally on higher wages, there is no evidence of improved efficiency. Is it, therefore, too much to ask the mine worker of whatever grade to show some consideration for the employer, and to endeavour to give a little in return for benefits which cannot be equalled in any other mining camp in the universe?" There we have the reverse side of the medal! Far from having anything to strike for, the mine worker of the Rand has every reason not to embarrass the industry. Not even the most thoughtless can by this time fail to be familiar with the true position of the low-grade mines, the closing down of which would be merely precipitated by a strike. And since the gold mines are debarred—unlike the building and engineering trades—from passing on to the consumer the extra charges involved in more pay or shorter hours, it is manifestly unfair that the mine workers should be implicated in the quarrels of their differently-circumstanced fellow-workers. In fine, the good sense of the leaders and of the more intelligent of the men on the mines can, we believe, safely be trusted to take no step that might endanger their own livelihood or the existence of the industry upon which we all more or less directly depend.

MINING QUESTIONS IN THE UNION PARLIAMENT.

Dredging for S.W.A. Diamonds—Wit. Deep Again—Senate Debate Diamond Cutting.

In the Assembly during the week Mr. Papenfus put a question regarding a certain contract permitting a Mr. Carroll to dredge for diamonds along the coast of the Protectorate of S.W.A. The Minister of Mines stated that Carroll found diamonds in the sea bed in December, 1909, and June, 1910, and would pay under contract 40 per cent. royalty to the Government. The contract, if renewed after peace, and in so far as it referred to the Union territorial waters, was made subject to confirmation by Parliament if necessary.

THE WIT. DEEP AGAIN.

In the Assembly Mr. Creswell put the following question to the Minister of Finance: (1) When the Custodian of Enemy Property was interviewed in December last by a director of the Witwatersrand Deep and a director of the Central Mining and Investment Corporation was he aware of the dispute between non-enemy shareholders relative to the control of the company? (2) Was the director of the Witwatersrand Company referred to a director associated with the Central Mining and Investment Corporation or with the Wit. Deep and Knights Central Shareholders' Protection Association? (3) If the former, what measures did the Custodian take to ascertain the facts of the case put forward by the latter body, and did he endeavour to obtain a personal interview with any director representing the Shareholders' Protection Association before deciding as to which side to support with his proxies; and (4) will the Minister introduce legislation which will make it impossible for the voting power of enemy-held shares to be used by the Custodian in disputes between the bodies of non-enemy shareholders, or, failing this, will he take measures to appoint as a joint custodian some person intimately acquainted with the manners and customs of Rand financial houses? The Minister of Finance gave the following reply: (1) Yes. (2) The former. (3) The Custodian had previously received a circular sent to his department by the Wit. Deep and Knights Central Shareholders' Protection Association setting out their view of the position and of the evils of the "group system" and containing an extract headed "The ignorant investor—God help him." The circular also contained a request for voting support and forwarded a form of proxy to be filled up in favour of Horatio Gamble, Frederick C. Holland and others of the Shareholders' Protection Association previously referred to. No application for an interview was received by the Custodian from the Shareholders' Protection Association, nor did he ask for one. (4) (a) No; (b) No.

In the House of Assembly last week Mr. Creswell asked the Acting Prime Minister: (1) Whether the Custodian of Enemy Property was approached before the meeting of the Witwatersrand Deep Company last May by the Central Mining and Investment Corporation or their agents with a view of obtaining his proxies in respect of the voting power of shares in that company in his hands; (2) whether it was not the practice of his department not to intervene in any internal disputes between non-enemy shareholders of companies in which enemy shares were vested in him; (3) whether subsequently to the meeting in May and prior to the meeting of the 15th inst., he was again approached by the same parties, and on what dates, and were any minutes kept of the interviews; (4) will the Minister obtain a full report from the Custodian of Enemy Property with reference to this transaction and lay same on the Table of the House; and (5) will he give instructions that so long as enemy shares are vested in the Public Custodian he shall refrain from using any voting power in respect of these without first

obtaining Ministerial sanction? The reply was in the following terms: (1) The Custodian has no recollection of being approached by the Central Mining and Investment Corporation or their agents previous to December last, but a definite reply will be handed to the honourable member after the Custodian has had time to communicate with his department at Pretoria. (2) The practice of the Custodian is to utilise all available legal measures to protect the interests entrusted to his care, and, in fact, he is under statutory obligation so to do. It is therefore the practice to intervene on occasion, and this has been and will be done. (3) In December last a director of the Witwatersrand Deep and a director of the Central Mining and Investment Corporation interviewed the Custodian and asked for his proxy. The Custodian asked for certain information with regard to financial and other matters connected with the company, which was supplied to him, and he then informed these gentlemen that his reply would be sent in due course. This was subsequently done, and a proxy forwarded to the gentlemen whom the Custodian wished to vote on his behalf. No minutes were kept of the interview. (4) Full details have been given in my replies to the hon. member of Tuesday last and to-day, and consequently a further report, which could only be repetition, appears unnecessary. (5) The Custodian of Enemy Property is a statutory officer appointed under Act 39 of 1916, and when property is once vested in him thereunder by Order of Court, matters arising out of such vesting must be left to him in order that the law may be complied with. Such matters, therefore, do not admit of Ministerial direction.



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DEBATE ON DIAMOND CUTTING.

The question of establishing a diamond cutting industry in South Africa formed the subject of a discussion in the Senate. Senator Whiteside moved: "That the subject matter of a speech delivered by Mr. B. Oppenheimer on the 15th October, 1918, with regard to diamond cutting be referred to the Government for consideration." He quoted a lengthy extract from Mr. Oppenheimer's speech, and said his contention was that the Government should take the remarks into consideration, with a view to establishing a diamond cutting industry in South Africa. Mr. Oppenheimer was one of the first authorities on the cutting and selling of diamonds. About 99 per cent. of the diamonds came from British Dominions, and they could assume that the whole came from South Africa. It was a reflection on them that the whole of this wealth should go to other countries, and not provide work and wages for men in the country. The bulk of the work and wages went to aliens now. If Mr. Oppenheimer could establish a cutting industry in Brighton, why should they not be able to establish such an industry in this country? Mr. Oppenheimer talked about "fairy stories" having been circulated to the effect that the diamond cutting industry could not be learned or acquired except by long years of practice; and even then it was stated the British workmen would prove incompetent. Well, such "fairy stories" had been circulated in this country, and in that House. He had yet to learn that the British workmen could not do what the working men in other countries could do. South Africa seemed to be run on the lines that it could not do what other countries could do. Old prejudices die hard. The Government was at fault in not striking out on new lines. In 1913 a Select Committee had reported that the total amount of diamonds exported from South Africa up to that date was £170,000,000. Had a diamond industry been established in Kimberley at that time it would have been a great advantage to the town and to the Union generally. Proceeding, Senator Whiteside pointed out that the total number of persons engaged in diamond cutting was given at 23,000, mainly in Holland; but he thought the industry might be equally successfully carried on in this country. It was a scathing reflection on the Government that the Select Committee which had reported on the subject in 1913 should have stated that the question of establishing a diamond cutting industry depended on the support of the diamond companies. It should depend on the Government.

Senator Wolmarans suggested that Senator Whiteside should amend his motion to read that the Government should lay a report on the subject on the table next session.

The Acting Prime Minister said he did not object to the motion. The Government had not ignored the speech made by Mr. Oppenheimer; they had the matter under consideration, but he did not think the Government should start the industry. They could, however, encourage it. The matter was under consideration, and although matters had not gone far enough to make a definite statement now, he hoped by next session they would be able to lay a report on the subject on the table. He was prepared to accept the motion, with the addition moved by Mr. Wolmarans.

Senator Tucker questioned whether it was wise to press the Government to enter upon a speculative venture which was not taken up by private individuals. What is the value of the motion? There is nothing to prevent private individuals coming in. If it was such a good thing private enterprise would have come in. Proceeding, he said they might just as well talk about manipulating wool, hides, mohair, etc., in this country instead of sending them overseas. He proceeded to explain the technical difficulties in the way of establishing a diamond cutting industry in South Africa.

Senator Whiteside, in reply, expressed satisfaction with the Minister's statement, but he would have liked it to have been more definite. He never intended that the Government should start the industry. Proceeding, he stated that Senator Tucker's reference to wool and mohair constituted very cheap arguments. Let the Senator study Germany. Did not Germany build up her great industry through taking the trouble to work up the raw products of other countries which the latter did not have the enterprise to do themselves? America had set the example in working up her own products. He proposed to add to his motion the words "should such consideration be favourable, to report to this House at the earliest possible moment." The motion was agreed to.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"J. L." (Benoni).—(1), (2) and (3) The matter will be dealt with next week. (4) Apply to any branch of the Central News Agency.

"Student" (Klerksdorp).—Write to the S.A. School of Mines for the 1919 Calendar, which will give you all the desired particulars.

"Anxious."—(1) Yes. (2) Yes. (3) We do not advise on speculations, or give sharemarket tips.

"P. E."—Nothing is yet known here regarding the flotation, but details will be published shortly.

Mr. Hugh Picard has been elected President of the Institution of Mining and Metallurgy in succession to Mr. H. F. Marriott.

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RAND MINES AND WHITE WAGES.—IV.

The Demand for Higher Wages—An Ascending Spiral—Two Whites and Three Blacks—The Ranter's Fallacy—The Remedy—New Standards Wanted—The Same Goal.

[By a Special Correspondent.]

THE intention of these articles is to outline the case of the ordinary man in the street in this seemingly remote matter of gold and its relation to prices. My object has been to indicate that this is not merely a matter for the special interests or classes directly concerned in gold production. The gold producers, employers, the bankers and financiers cannot be allowed to settle such matters as closing down gold mines, or limiting credit and loans on their own. It is a question that profoundly affects everybody, because gold, as the Inchcape Commission has just pointed out, is the factor that determines prices—a main factor, that is—and we are all vitally interested in the prices of things. If closing down gold mines is going to reduce prices, and reduce wages and reduce work, we ought to know exactly why such changes are necessary at a time when all industrial questions relating to credit and employment and unemployment have in them something of those cataclysmic forces that destroy governments and societies. In the circumstances, the bankers and the Producers' Committee must not be surprised at outside observers "butting in" to see what is going on.

THE DEMAND FOR THE WHOLE HOG.

For everywhere there are demands by "workers" and by "returned soldiers" and "dilutees," and "munitionettes," and every other employed class, for this wage and that privilege, shorter hours, meal allowances, war bonuses, and what not. Ordinarily these demands can be dealt with seriatim. But just now there are millions who have benefited by the tremendous expansion and high wages of war and they, being ignorant, imagine that the world can continue to raise itself by pulling at the straps of its trousers. About 200 millions of persons in Russia and Europe are already making experiments in this direction and will continue to do so for some years to come. They will be centres of "unrest."

For those millions have behind their wrecking madness the impelling idea that every manual worker is entitled to the value of the full products of his muscular work. It is this idea that is troubling the world and is causing the unrest reported day by day in the cables. At the Labour Congress held in Durban a few weeks ago a resolution was passed, that the agitations and alarms must be kept up till every man gets the full products of his labour. Mr. Colin Wade put it on a more aggressive plane a few days ago. He said he was a Bolshevik, and the public men who were not of that order would soon have to take a back seat (I am quoting from a newspaper report). He definitely challenged all political parties in South Africa that they were all political humbugs and liars, because when asked for a pronouncement of their politics they babbled about homes for the people, minimum wages, and so on. The people did not want a minimum or a maximum wage: they wanted, he said, all they produced. (Applause.)

AN ASCENDING SPIRAL.

They want all they produce. It is a catching sort of philosophy, and it is not of much use pointing out that if the white workers in this country got only what they produced they would get very little. They claim to be followers of the economic philosophies of Marx. It was Marx who said that "the value of a commodity in gold is its money form, or price," and he and all his followers, who number a few hundred millions, lay down the principle that labour is a commodity. He said: "The value of labour-power is determined, as in the case of every other commodity, by the labour-time necessary for the production of any special article." Consequently the Inchcape Committee, the bankers and financiers who are discussing to-day the question of gold production and prices, are also dis-

cussing the price of that human commodity, labour. And this is where the white workers of the Rand come into the discussion, because if a lessened gold production is going to affect prices and lower them it is necessarily going to affect the price of labour, also—that is, wages—and lower them. The gold-mine owners all the world over are demanding State relief because many of their mines are working at a loss owing to high prices. And it is just at this moment that the controllers of the price of labour—that is, the Trade Unions—are putting up the prices for their commodity: they want higher wages. They say, "Living costs are high, therefore we must get higher wages." But these higher wages are the cause, to a great extent, of higher living costs; and to make wages higher means a still higher range of living costs. Where is it going to end?

FACTS ALTER CASES.

Many labour extremists are delighted to see this state of affairs. They imagine that it will end in a general row in which Labour will win and will have a good time in shooting and murdering capitalists and breaking up the institutions of society. I am not concerned with these fancy hopes and aspirations just now. What I am trying to demonstrate is that no one is going to benefit by shutting down Rand gold mines except that very large class in Europe that now holds interest-bearing State loans (*vide* last week's article). What is happening in Russia is of little concern to us; and even what is likely to happen in the labour world of England is of little concern to South Africa, except in so far as it affects prices and the work of the low-grade gold mines. Russia is paying in blood for her little upset, just as France is paying in blood for her little upset of a hundred years ago. We don't want South Africa to pay any more in blood: it is an expensive commodity. If

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we were a purely British, or a purely industrial, community, there might be some sense in quarrelling; but we are not a white industrial community, and we are a British minority in a pastoral and farming community of Dutch landowners. Now these facts alter the case for the Anarchist.

MARX AND NEGROES.

It may surprise Mr. Wade and the extremists who passed the Durban resolution just mentioned, but it is a fact that the full and particular application of the Marxian philosophy, on which they rely, would drive every working white man out of this country. If every man is to get what he produces by his manual labour the natives will get a few millions a year more and the white workers will lose them. It was stated in some evidence given before a Parliamentary Committee a few years ago that a white miner may be a little better than a native miner. It was said that two white miners are about equal to three native miners. Personally, I do not think that man for man the white miner will drill more incline than a black. But let us leave it at two whites for three natives.

Now a native gets less than two shillings a day and, all told, his cost is less than four shillings a day, including food, shelter, etc. Three natives would thus cost less than twelve shillings a day, and two white miners are worth in comparison the same amount, or, say six shillings a day each. This is what the white miner is entitled to get under the Marxian philosophy as interpreted by the Trade Unions here who insist upon maintaining only raw natives at work and will not allow "Cape boys" to compete lest they reduce the "skilled" miner to six shillings a day!

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Then how does the white ranter of the platform justify the taking of an average wage of anything between 20s. and 30s. a day? A wage of 24s. a day is equal to the wages of six native boys, and nobody alleges that a white miner can do the work of six "boys." Now a white "worker" can only justify his taking of the full wage product of six native miners by chucking the Marxian economy altogether. He does this on the claim, not that he is a better and more skilled driller, but that his intelligence is higher than that of the native. In other words he claims a brain value; and the moment he does this he steps out of the ranks of the "oppressed proletariat" and joins those of the capitalist. The capitalist claims a higher reward because of his capacity to plan things, and the white worker on the Rand claims higher wages because he can plan things. He can, for example, point out where the holes should be drilled in a stope, just as a capitalist can point out where to plant the holes to blow up a difficult financial or business emergency. In other words, the question of the quality of the work done comes into this white demand for higher wages. Now Marx and labour leaders of the past have nothing to do with the quality of the effort or its brain values. To admit that these are worth anything is to cut the inside out of the whole labour creed, including Mr. Wade's glib demand for "all they produce."

IN THE SAME BOAT.

For if the mere knowledge that holes must be put here and not there is worth an extra 18s. a day, on what grounds can coloured men, who easily acquire their knowledge and are ready to accept 6s. a day for it, be excluded? Labour is a commodity. Very well. The mines of the Rand and

the prosperity of South Africa are threatened by the high cost of this commodity, and it becomes a public question of the first importance whether an all-round reduction in the cost of getting gold is not called for. The world will not pay more than 77s. 9d. an ounce for it, and at this price many mines cannot produce it and pay at the same time these fictitious white labour values that claim, regardless of Marx, 24s. a day for a commodity that can be supplied for six shillings. This is the issue that is facing the whole South African community and indeed, in other terms, the whole world; for the latter, as I have pointed out in preceding articles, can on no account permit the production of gold to be lessened at this great crisis in the world's economic history. Gold and prices and civilisation are now, and will be for some years, in the same boat.

FORCE NO REMEDY.

I write the above just to indicate how hollow is the case for these excessive white labour taxes on the gold industry. They are not based on any sound economic theory. The Marxian theory of surplus-value which is relied on by the Bolsheviks of South Africa does not apply to an industrial field where the real industrialists are negroes. It is here where the stupidity of a stupid economic philosophy is most easily seen. When it was proposed to use coloured labour in the war, Mr. W. Thorne, the English Labour leader at once objected; white labour is a commodity that must be artificially protected, sold at the highest possible price, and profiteered in South Africa for four times as much as it is worth. Now this is a position that can be maintained only by force: it has no merit beyond the alleged merit that Might is Right. Whatever may be the position in Russia and in Germany, or even in England, there is no valid material force behind the white labour demands so confidently put forward on the Rand and in South Africa—no force, that is, that counts for a row of pins against the latent strength of this semi-Dutch Dominion. And the sooner the common sense of the position is recognised, the better for all of us.

NEW STANDARDS WANTED.

I have very little space left for any suggestion of constructive policies. These must concern themselves with the main issue dealt with in these articles, which is standards of value. We want better and sounder standards of value. Why is our gold standard of value so badly buttressed that it wobbles through the years like a reed in a gale? Never for ten years in succession are prices the same. Gold and credit and loans and business enterprise are so badly dovetailed that the ramshackle structure threatens constantly the security of human society. In the past men have allowed prices to rise and fall, and in their movement carry wages and human values sometimes down and sometimes up till we see the organised world seriously threatened to-day with dissolution. These labour troubles in Europe have not yet really begun. For years the effects of the war will continue to influence the demands of Labour, which is steadily putting up its price and so making life impossible for everyone. What we want is a standard, not only of gold values, but of effort value that is work value. Labour must discard the old muscular standards and adopt mind and muscle standards combined. It is the brain that earns, not the muscles; and until the whole great world of labour and of man recognises this as the fundamental fact of its existence and of its right to live, there can be no settlement and no peace. The conflict is not between Capital and Labour. It is between mind and body, between mere energy and physical force, and those human mysteries we call Intellect and Will. Bolshevism is the ism that would beat out the brains of the world and reduce all humanity to the level of the winter wolves. They, too, are Socialists, and hunt in packs.

A WORLD CONFERENCE.

What is wanted as the first step in reform is a world conference to deal with standards of value. I do not propose to discuss this subject. But it may be of service to suggest that the present price for gold, which is 77s. 9d. per oz. nearly, is an obsolete convention which is not in

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any sort of work-a-day relation to the value standards of to-day. Gold is getting yearly scarcer. No new great gold-fields likely to affect prices are known to exist. Yet the demands for a sound currency such as will serve to develop the industries and commerce of great communities such as India and China are daily growing. Looking at the perils of the financial position barely suggested in these articles, and the still greater perils of unemployment and high prices now about to develop in every war zone it is plain that a great effort is needed to ensure stability in commodity values, that is prices, and so ensure an ordered peace.

NEW GOLD STANDARD.

My personal view is that gold and silver must be considered together. To run the risks of varying standards of value, that is of appreciating and depreciating currencies in every tinpot country of the world, is to destroy the League of Nations before it is fairly born. The Producers' Committee and the bankers of London are tinkering futilely with the very core and radicle of the social organism. Let new values be put upon gold and silver, values more in accordance with the realities of to-day than those antiquated metal estimates of Calonne in 1779 and of Peel in 1844, and let these values be standardised by the consent and laws of all the leading civilised nations.

A LABOUR COLLEGE?

Having come to a decision on this main point of exchange standards and their values, the way is open for that more complex and difficult question of labour or effort-values. Is it not possible for Rand labour men to lead the labour world in this great enterprise? Here, as I have shown, labour is, willy-nilly, dealing, not in labour-time values, but in labour-quality values. Why not recognise this basic fact, which holds throughout the varying circumstances of indus-

try everywhere? An intelligent (brain) man goes through a stope and in a twinkling estimates and decides on the plan to work it; another white man, more a fool, may spend hours of labour (labour-time) and in the end decides on some stupidity that will cost twice as much as the first man's estimate and yet not be as effective. Why not see things as they are, and recognise that brain counts? It is the law of life and progress, and the odds are that in the long run it will break every class and creed that runs counter to it—as it has broken the creeds of Greece and Rome and is breaking those of Russia and of England. Let someone put up the money for a Labour College in South Africa where these great needs of humanity can be threshed out. It is not true that a black man can be measured by the same gauge as the white man. Then what must be done? Clearly there must be established a sliding scale that will give its values to the savage fool at the one end, and to the trained genius at the other. How can we measure the differing values of Sixpence Umtshangaan and of Marshal Foch, the man who shortened the war with its daily expenditure of 15 millions of money and thousands of human lives.

THE SAME GOAL.

Once we get these human values hewn out roughly we can reorganise society. For instance, is it good business to use white men in low class employments where their intelligence is not fully exerted? The answer to such a question would conceivably upset the whole Creswellian creed that white men should be employed in these deep mines breaking rocks. We can surely get them going at higher work—say, for example, the direction and control of the hundreds of millions of men whose chief asset is their muscular force. We want new standards, true philosophies. Why quarrel if we are agreed about the goal?

(To be continued.)

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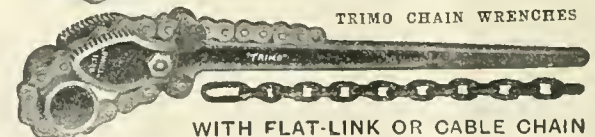
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THE LATEST DEVELOPMENT OF DIAMOND WINNING IN S.-W. AFRICA.

Search for Big Mine Under the Sea—Dredging the Last Word in the Evolution of Diamond Recovery—Important Government Concession to be Launched.

THE dredge has been adopted by the latest company formed to exploit the diamondiferous coast belt of South-West Africa. Ever since the famous Nema expedition it has been known that everything pointed to the existence under the sea somewhere off the coast of a large diamond pipe, which would account for the stones washed up and recovered from the sands. This theory is strongly supported by Dr. P. A. Wagner in his classic work on diamonds. After a careful examination of all the possible sources of the S.-W. African diamonds, Dr. Wagner writes: "We are led to conclude that the S.-W. African diamonds have been derived from a primary deposit, or from primary deposits, which now lie buried beneath the sea somewhere off Pomona." It is an open secret that a company has now been formed, with very powerful financial backing, to dredge the ocean bed along the coast and the diamondiferous deposits of the shore under agreement with the Government, and the fact was admitted by the Minister of Mines in reply to a question put to him during the week in the Assembly. It appears that the original concessionaire is one Carroll, and the Government is to take 40 per cent. of the proceeds of the work. Arrangements are said to be in a forward state at Capetown to begin dredging at an early date. One important Rand house has taken an interest in the undertaking, and a big Cape financial trust has also a substantial holding. The public will, doubtless, soon be offered participation and the career of the new venture will therefore be watched with more than usual interest. In the meanwhile, it may be of interest to trace the development of the diamond winning industry on the shores of South-West Africa.

In May, 1908, diamonds were first discovered in the sand dunes about ten miles east of Luederitz Bay, but there was no one on the spot who had any experience in the winning of the precious stones. Recovery operations were in the beginning, therefore, carried out only in the most primitive way by Ovambos and Cape boys crawling along the ground and picking the stones by hand. Some places proved of such richness that the boys often delivered as many as forty stones, in some cases even a hundred stones. This method naturally proved by no means a perfect one, and it was replaced by more efficient methods as soon as these could be introduced; only at outside places which suffered from lack of transport was it continued for a longer time. At other spots sieving and washing were started. Fairly satisfactory results were obtained by hand sieving and washing as long as surface deposits only were treated, consisting mainly of gravel from which the fine sand and clayey portions had been removed by the wind, thus showing diamonds more highly concentrated. The concentrates ("deposit") vary in composition, but mostly consist of garnets, olivine, iron pyrites, limonite, hæmatite, magnetite, particles of country rock, and diamonds: these minerals form the so-called "heart" at the bottom of the sieve, while the rest is principally composed of white quartz and chalcedony or variegated agate. By turning the sieve upside down, the heart is exposed and the diamonds can be picked out. It soon became apparent that this method was lacking efficiency for various reasons. As the specific gravity of the diamond, being 3.5, holds an intermediary position between those of quartz (2.6), olivine (3.0), and some of the above-mentioned minerals, as garnet (4.0), pyrite (5.0), and hæmatite (5.2), while it does not vary to any great extent from others, as limonite (3.4 to 4.0), not all the diamonds would settle at the bottom of the sieve, which meant only a partial recovery, not considering the loss of diamonds occasioned in the ordinary way by oversight owing to the large quantities of gravel treated. This

method lost favour when more gravel from the underlying beds was handled, in which, apart from yielding less diamonds, fine sand and clay occurred in larger proportions thus rendering sieving and washing less effective. At this stage the output per boy on a certain good field amounted only to .5 to 1.3 carat in fine weather and .26 to .75 carat on rainy days. It was, therefore, found necessary to improve both the preparatory and washing processes. In this respect the material was now first dried before sieving, lest the clay should choke the meshes, and shaking screens were introduced called "babies." It is true that no good classification of the material was obtained, which, after the clearing of the fine sand and boulders, varied in size from one-sixteenth to three-eighths of an inch, but the quantity handled was quite satisfactory, amounting to as much as eight cubic yards per two boys' shift. A further improvement could be recorded from revolving screens ("trommels") consisting of a conical screen of different gauges revolving round a slightly inclined shaft and being operated by one or two boys. By means of cams and dropping weights, promoting jerks, the meshes were supposed to be kept clear of the fine sand and the clay. But a drawback of this machine is the comparatively large wear and tear of the fine screen, which covers the major portion of the drum, by the bulk of the stuff passing over it, thus also choking the meshes; yet with proper attention good results were obtained. On the other hand, the gravel, say from one-sixteenth to three-eighths of an inch in grain, is classified in four or five sizes, therefore securing a much better jiggling than with unclassified material. For a similar purpose a classifier of the shaking screen type was designed and constructed by Messrs. Schuller and Kellner. In order to reduce the inevitable irregularities attendant on manual labour, and at the same time to attain the treatment of a larger quantity of stuff by continuous work, various types of washing machines, as installed on British South African fields, were tried, amongst others rotary pans and hand-driven jiggling machines, called "Johannesburg" and "Capetown" (Caspereuthus) type. The former gave no satisfaction, and were soon discarded, while jiggling machines were universally adopted. Their action is based on the percussion jigger principle. At first ten to twelve cubic yards of gravel were passed through these machines; but it was found out that only half of that quantity could be properly treated. Owing to the irregular working of the



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machine, a large loss of diamonds resulted, amounting to as much as forty per cent., the same percentage as with handwashing. Local imitations of this machine, although announced as improvements, showed no better results. Before the war, the principal companies operating on the fields used every effort to devise more effective means to deal with the diamondiferous sands, in which connection a scientific staff was kept on the fields; also quantities of material were shipped for making experiments oversea. The first success was obtained by Mr. Max Schiechel, consulting engineer to the Metallurgische Gesellschaft, Frankfurt a/M. The first plant of this type, consisting of six separators, was erected at Bogenfels in May, 1910, and the success of this plant was followed by the ordering of eight larger plants within a year. The capacity of a plant of twelve Schiechel separators is about fifty cubic yards of classified gravel per twenty-four hours, the product of from four to sixteen times the amount of original sand. Thirty-five to forty natives are required for the operation of the plant, and one hundred and fifty to two hundred and fifty for shovelling, sieving, and transporting. The loss in diamonds, especially of small-sized stones, may be estimated at 5 per cent. It is true that certain tests showed a higher figure than the one mentioned, but this can be ascribed only to the incompetency of the operators. Since then the machines have been further improved. Besides the Deutsche Diamanten Gesellschaft, other companies adopted this system, amongst others the Colmanskop, Ltd., Weiss-De Meillon, Swakopmunder D.G., Carlstal D.G., etc. A great advantage of the Schiechel separator, especially for the conditions in South-West Africa, is the simplicity of its construction, showing no bearings or other movable parts exposed to dust and sand storms. Notwithstanding the fact that the Schiechel separator was a marked success, the Koloniale Bergbau-Gesellschaft, the largest diamond company in South-West Africa, who also

worked the fields of the Government Pacht Gesellschaft, continued experiments of their own to find out a system applicable to operation on an extensive scale by a central plant. As the result of these experiments, which were conducted on scientific lines and with great care, the company decided to adopt a combination of washing trommels, flat shaking screens for wet sieving, and a new piston jigger, constructed by the Humboldt works, Cologne. The results obtained were by far superior to those of other systems. Further improvements enabled the Humboldt works to guarantee the loss of diamonds not to exceed 2 per cent., at the same time guaranteeing an increase of the quantity of gravel to be treated to the extent of 40 per cent. Tests were made with heavy liquids, grease tables, etc., but these methods did not prove suitable for the winning of South-West African diamonds. For remote fields an easily transportable plant was designed by Messrs. Schuller and Kellner. It may be described as a percussion jigger with slow upward and quick downward movement of the screen, cleverly adapted to local conditions. This machine was tried on a field of the Deutsche Diamanten Gesellschaft. According to the statements of Mr. Kellner, a double set of the machine dealt with eight cubic yards of classified gravel in five hours, the loss of water being three-quarters to one cubic yard, but actual working results are not to hand.

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THE YEAR WITH THE WOLHUTER.

Points from the Consulting Engineer's Report.—Increased Costs and Labour Shortage Restrict Operations and Profits.

In his report on the work accomplished during the financial year ended October 31, 1918, at the Wolhuter, Mr. Percy Cazalet, the consulting engineer, writes:—The principal features of the results for the last three years can be seen from the following statement: Tons mined, 1916 472,733, 1917 462,588, 1918 418,078; per cent. sorted, 1916 10.3, 1917 12.1, 1918 8.5; tons milled, 1916 423,500, 1917 406,750, 1918 382,950; yield, 1916 £531,333, 1917 £500,456, 1918 £456,148; yield per ton, 1916 25s. 1.1d., 1917 24s. 7.3d., 1918 23s. 9.9d.; expenditure, 1916 £370,159, 1917 £361,114, 1918 £377,273; expenditure per ton, 1916 17s. 5.8d., 1917 17s. 9.1d., 1918 19s. 8.5d.; working profit, 1916 £161,223, 1917 £139,342, 1918 £78,875; development footage, 1916 11,235, 1917 8,327, 1918 6,044. As anticipated in my previous report the year's operations have been seriously affected by the shortage of native labour and adverse war conditions; the reduction of profit was due chiefly to the lower tonnage milled, the rise in cost of stores and to increased white wages. There was also a drop of 9d. per ton in the value of the recovery. Development has been continued in the south-east portion of the property and should practically be completed during the current year. Of the ore mined during the year 69 per cent. was from block ground contained in the payable reserves; the available straightforward stope faces in the present reserves are rapidly diminishing, and it will now be necessary to call upon an increasing proportion of ore from the reclamation of pillars and isolated blocks in the upper workings of the mine. The ore reserves have been recalculated as at October 31st, 1918, and amount to the following: Pyritic quartzite,

31,280 tons, value 5.9 dwts., stope width 65 ins.; Main Reef, 159,750 tons, value 4.6 dwts., stope width 62 ins.; Leader, 221,297 tons, value 7.2 dwts., stope width 60 ins.; South Reef, 376,563 tons, value 5.4 dwts., stope width 66 ins.; total immediately available, 788,890 tons, value 5.8 dwts., stope width 63.5 ins.; shaft and boundary pillars, 67,980 tons, value 7.0 dwts., stope width 55 ins.; total reserves, 856,870 tons, value 5.8 dwts., stope width 63 ins. Even with the inclusion of shaft and boundary pillars in the reserves there is a decrease shown of 214,770 tons on the previous year's valuation; this is due to the excess of ore mined from the reserves over the payable ore developed, and also to the raising of the pay limit, necessary on account of the increased working costs. Owing to the latter reason 118,000 tons of an average value of 4.25 dwts. have been excluded from the present estimate. The increased value of the reserves shown is due to the increased pay limit used and not to the value of the ore developed during the year. The shortage of native labour was aggravated by the influenza epidemic in September and at the present time is very acute; this state of affairs, if continued, will adversely affect the mine, which must now depend more and more on ore from reclamation work which cannot be performed by machines. No increase in the monthly tonnage milled can be expected in the coming year, but it is hoped that the value of the ore from reclamation may be such as to counteract to some extent the decreasing richer reserves; the poor labour position and high costs can only result at best in a continuance of the present scale of operations and moderate profits of the last few months.

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PROGRESS ON THE GENERAL MINING GROUP.

Native Labour Shortage—Working Costs Coming Down—Position of Low-Grade Mines.

THE following particulars regarding the operations of the producing companies of the General Mining group are given in the directors' report for the quarter ended December 31:

VAN RYN G.M. ESTATE.

Total profit for the quarter, £15,754. The ore crushed is less by 540 tons than that milled during the previous quarter. The revenue per ton milled shows a decrease of nearly eightpence, and working costs were higher by one penny. The lower revenue is due to the gradual exhaustion of certain rich stopes in No. 2 section and their replacement by others—in the No. 3 section—which are of somewhat lower grade. The development footage sampled totalled 1,115 feet, and gave the following results over an average stoping width of 48 inches: Payable, 695 feet, having an average value of 6.6 dwts.; unpayable, 420 feet, having an average value of 3.1 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

NEW GOCH.

Total loss for quarter, £2,866 10s. The expenditure on capital account for the quarter amounted to £6,198 9s. Shortage of native labour, following on the recent influenza epidemic, accounts for a reduction in the ore milled of 6,350 tons. In consequence, the operations for the quarter resulted in a loss. The development footage sampled totalled 845 feet, and gave the following results over an average stoping width of 51 inches: Payable, 750 feet, having an average value of 9.75 dwts.; unpayable, 95 feet, having an average value of 1.96 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

WEST RAND CONSOLIDATED.

Total loss for quarter, £8,808 5s. 7d. The expenditure on capital account for the quarter amounted to £4,457 12s. 3d. The ore crushed, at 80,550 tons, is less by 11,680 tons than that milled during the previous quarter. This is due, chiefly, to the influenza epidemic, which not only incapacitated a large proportion of the employees, both white and coloured, for a considerable time, but also, by reason of the practical cessation of recruiting due to the epidemic spreading in the native territories, reduced the native labour supply to an extent which made it impossible to run the mine at a profit. The position in this respect shows signs of an improvement. Of the footage driven, risen and sunk on development during the quarter, 1,190 feet were sampled and gave the following results over an average stoping width of 50 inches: Payable, 580 feet, having an average value of 9.45 dwts.; unpayable, 610 feet, having an average value of 3.36 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may subsequently be considered advisable when compiling the ore reserves.

AURORA WEST.

Total loss for quarter, £5,958 17s. The expenditure on capital account for the quarter amounted to £5,629 12s. 2d. In the previous quarterly report it was stated that shortage of native labour had adversely affected the results from the mine. During the quarter under review, owing to the practical cessation of recruiting which followed the influenza epidemic, the position in this respect became accentuated, and the supply of native labour fell rapidly to a point at which it proved impossible to mine sufficient ore to cover expenses. At the present time, there are signs that the wastage has ceased, and a slight improvement is beginning to manifest itself. Since, however, it appears unlikely that an adequate supply of native labour will be available for

some considerable time, arrangements have been made to rent the air compressing plant of an adjoining mine, and to compensate, as far as possible, for the shortage of native labour by the more extended use of machines of the jack-hammer type for stoping. The development footage sampled totalled 685 feet, and gave the following results over an average stoping width of 42 inches: Payable, 495 feet, having an average value of 8.60 dwts.; unpayable, 190 feet, having an average value of 2.63 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

ROODEPOORT U.M.R.

Total loss for quarter, £13,567 11s. 8d. The expenditure on capital account for the quarter amounted to £54 0s. 6d. Despite the serious depletion of the native labour force which has taken place, the ore crushed is less by only 1,324 tons than that milled during the previous quarter. Unfortunately, however, the revenue per ton shows a decrease of 1s. 3d., and working costs, owing to the smaller tonnage, were threepence higher. At the present time the grade shows a slight improvement, and working costs are substantially less. Reclamation has been commenced in the upper levels of the Kimberley main shaft and in the United section, and it appears evident that a fairly large tonnage of payable ore will be derived from this source. The development footage sampled totalled 710 feet, and gave the following results over an average stoping width of 46.4 inches: Payable, 495 feet, having an average value of 8.8 dwts.; unpayable, 215 feet, having an average value of 3.2 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

MEYER AND CHARLTON.

Total profit for quarter, £70,994 16s. 2d. A percentage of 10.8668 of the net produce from mining operations is payable to the Government in respect of certain undermining rights leased to the company. The expenditure on capital account for the quarter amounted to £1,083 8s. 5d. Reclamation in the upper workings of the mine has been undertaken on a somewhat larger scale during the past quarter, and, as the result of an increased tonnage being obtained from this source, the ore milled exceeds by 5,676 tons that crushed during the previous quarter. Working costs per ton milled show a reduction of nearly 3s. 5d., and the total profit exceeds the previous return by £3,190. The development footage sampled totalled 380 feet, and gave the following results over an average stoping width of 51.7 inches: Payable, 305 feet, having an average value of 19.92 dwts.; unpayable, 75 feet, having an average value of 2.22 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

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HYDRAULIC PROSPECTING AT THE ROOIBERG TIN MINES.*

[By E. R. Schoen, M.E.]

THE method of surface prospecting by means of hydraulic jets or monitors is not novel, but, whereas this process has hitherto been applied only where water is plentiful and the area to be prospected has a steep slope along which the debris or tailings can automatically run off to valleys lower down, the method inaugurated at Rooiberg is, as far as the writer knows, the first attempt to use this process on practically level ground with artificially conserved return water. It should add to the clearness of these notes to briefly outline the geology and configuration of the area in which the Rooiberg Tin Mines are situated, and more especially where hydraulic prospecting is being carried on. The geological formations at Rooiberg have been classified as the Rooiberg Series belonging to the lower division of the Waterberg System. They consist of sandstones, quartzites and bands of shales, forming as it were an irregular laccolite in the underlying granite, whilst igneous intrusions in the form of felsite and gabbro dykes traverse the area in different directions. The dip of the strata is about 10° N., and the surface of the ground generally has a gentle slope in the same direction. The surface is for the greater part covered with a layer of sand varying in thickness from 1 to 10 feet; in places, however, the rock formations outcrop, and in others they are overlain by a sheet or outcrop of surface laterite (a gritty sand and ironstone cement) several feet thick, frequently hiding the outcrop of stanniferous fissures. The cassiterite occurs in the sandstones and quartzites in the form of veins or lodes, also in pockets along cracks and on the bedding planes of the rock formations. Whereas no general direction can be assigned to the cassiterite lodes, they follow in the main three directions of the compass—i.e., N. and S.; N.E. and S.W.; and E. and W. As the surface of the ground is generally covered with a thick layer of sand, the veins rarely outcrop, but the weathering and disintegrating tendency of the lodes and of the country rock has caused a dissemination of the cassiterite from the lodes in the sand overburden over a large area, from which the tin may be profitably extracted. In places the mineral must have at some remote period been boldly exposed on the surfaces, and in such cases it was discovered, mined and smelted by an ancient, unknown people, who have unfortunately left no traces as to their identity. Many primitive ancient workings spread over a wide area, and in which there have been found various implements, such as stone hammers, iron chisels, hoes and wooden ladders, testify to the thoroughness with which these ancients did their work. In very few instances only has any payable ore been found left standing in the old workings, and then probably only because the subterranean water level prevented deeper penetration with the primitive tools at their disposal. Numerous slag heaps with broken bits of pottery and tuyeres of baked earth are to be found on the property, whilst a number of ingots of smelted tin and bronze found in the neighbourhood of slag heaps prove that the people who worked these deposits had considerable knowledge of metallurgy and of alloys. Where the stanniferous fissures do not come to the surface, and are hidden by a thick layer of sand, as is generally the case, the only possible form of prospecting is to remove the sand overburden down to bed rock, and thereby expose the presence of any stanniferous fissure. The usual procedure is to make extensive cuttings following surface indications in a favourable area; this is a slow and speculative method of prospecting, involving much time and expense, and in this form of exploring the ground there is always a considerable chance of missing ore bodies and fissures not directly exposed in the cuttings. The problem which presented itself was to discover a cheap process whereby surface prospecting might be accelerated by removing the sand overburden from the bed rock more rapidly and more completely than could be achieved by means of costean work, and incidentally to recover a portion of the tin con-

tained in the sand so removed. It was eventually decided to instal an experimental sluicing plant, which, if it proved a success on a small scale, might advantageously be enlarged later on. The successful operation of a plant of this description, in which low running costs are an essential, is under Rooiberg conditions faced with considerable difficulties, because, unlike most alluvial tin propositions, where the three main factors for successful work are abundance of running water, natural fall of ground for disposal of tailings, and coarse grain of the cassiterite, all these qualities are absent at Rooiberg, there being for the greater part of the year no running water: the country is practically level, and the tin is very fine. It was therefore necessary first of all to construct a large storage dam from which to draw make-up water during the dry season; when this was successfully accomplished the plant was designed and constructed on as economical lines as possible, at the same time providing for a certain amount of flexibility for removal from site to site as the area denuded became larger. The following is a brief description of the process: The sand overburden is broken and washed down by means of a monitor and auxiliary water jets into a screened sump, from which the pulp is elevated by a gravel pump to a sluice box about 20 feet above the level of the ground. Where the ground has an insufficient fall for the pulp to gravitate the sand overburden is removed in trucks and dumped into the sump direct. The sandy gravel in the sluice box is turned over by natives with forks. From the sluice box the tailings run into concrete settling pits, where the water is drawn off into a return water dam to be used again, whilst the tailings are discharged from the pits into trucks and trammed to the dump. With sufficient natural fall in the ground the handling of tailings would be obviated and costs considerably reduced, but, as already explained, this handling of the waste product is unavoidable at Rooiberg. After the sluice box has been filled with sand and gravel, which is effected by putting in stops or riffles from time to time, the material is run down with clear water, in order to reduce the bulk of sands and to intensify the concentration. This operation occupies about nine hours for a full sluice box, the sands concentrate then containing anything up to 1 per cent. metallic tin. The concentrate is then removed, screened and conveyed into a water-borne strip to a Wiltley table, which yields a concentrate of about 30 per cent. grade. Subsequent dressing of this material in the main plant at the mine brings the grade up to a marketable product of approximately 67 per cent. metallic tin. The concentrates recovered from this source are impure, containing other minerals, such as ilmenite, magnetite, garnets, tourmaline, zircon, and sometimes a little fine gold. After the rocks

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* From Paper read before the S.A.I. of E.

have been denuded they are carefully examined for the existence of lodes or fissures, and when such are found they are marked down for future exploration. Sometimes the presence of nodules and crystals of cassiterite indicates the vicinity of a fissure. It may be of interest to give a short description of the different units of the plant. The power plant consists of a 60 h.p. single-cylinder Tangye suction gas engine of the hit-and-miss type. The fuel used in the producers is charcoal, locally burned. The gas engine generates the power for driving a 65 k.w. alternator, which supplies current for two 50 h.p. motors, one of which drives a 6in. centrifugal gravel pump, whilst the other motor is used for driving a two-stage Sulzer pump, which supplies the pressure head for the monitor and auxiliary jets. The pressure at the nozzles varies from 40 to 80 pounds per square inch, according to the number of jets used. The monitor used is of the "Little Giant" type, fitted with a deflector, but the latter is seldom used, being not necessary. The diameter of the nozzle is 1in. or 1½in., according to requirements. Both the gravel pump as well as the Sulzer pressure pump have worn remarkably well, and although in almost daily use for over a year, have so far had no important wearing parts renewed. This feature is especially noteworthy as regards the gravel pump, which discharges a very gritty substance with pebbles or boulders measuring up to 5 inches in diameter. The gravel pump is fitted with a priming device, worked from a lever fitted to the suction pipe, and discharges the gravel on to a grizzly with ¾in. spacings, situated at the head of the sluice box, where the larger pebbles and grass roots are got rid of. The sluice box is built on trestles about 20 feet above ground level at the head, and is constructed of wood. It is 100 feet long by 8 feet wide by 18 inches deep, and is built cascade fashion, with a clear drop of 9 inches at the end of each section, in four sections of 25 feet each, to allow of easy removal to another site. Each box section is provided with one set of riffles about 1 inch high and 2 inches wide, which are built up during the sluicing process as required. Of the longitudinal and cross-section of the box, the constructional details are as follows: The sides are made of two 9in. by 3in. deals, bolted together with a joint of two strands of marline; the bottom consists of 9in. by 1½in. deal, tongued and grooved and nailed to the box sides at right angles to the run of the box. To make forking easier a false bottom is inserted, which consists of 9in. by 1½in. deal fitted parallel to the run of the box, and having the top surface planed. The box rests on four 8in. by 4in. pitchpine bearers, spanned from trestle to trestle by a 12ft. 6in. span. The trestles are made out of 6in. by 4in. pitchpine legs and 6in. by 6in. caps. The girths and braces are made out of 4½in. by 3in. deal. The mud sills are of 9in. by 3in. pitchpine. The riffles are placed 18 inches from the end of each 25ft. section.

Important points in the lay-out of the sluice box are the gradient, width and length given to it, so as to get the best results under given conditions of flow, because on these factors the percentage of recovery largely depends. It is a known fact that the efficiency of the sluice box rapidly decreases as the volume of flow and quantity of gravel increases. The ratio of water to solids in the pulp is another important point, more especially when the tin concentrate to be caught is very fine grained, as is the case at Rooiberg. Serious losses may be prevented to some extent by lengthening the box, but here again the economic limit is soon reached owing to the loss of time in running down and cleaning up. At Rooiberg the most suitable gradient was found to be 3 per cent., and the material delivered to the boxes is about 2 lbs. of solids to one gallon of water. The following is a grading analysis of an average tin concentrate after the material from the sluice box has been treated on the Wilfley table:—

Standard Mesh.	Quantity per Cent.	Per Cent. Met. Tin.
+ 12	0.5	20.7
+ 20	1.5	57.5
+ 50	13.2	61.9
+ 80	27.8	29.9
+ 200	48.3	16.5
- 200	8.7	22.5
	100.00%	27.50%

The capacity of the plant described above, which, as explained, is an experimental one, is about 100 cubic yards per day, but the yardage also depends on the amount of time devoted to the dressing and running down of the product in the sluice-box, and to the grade of the concentrate aimed at. The grade of the sand overburden before treatment varies from one to four lbs. of tin per cubic yard, and the recovery to date in the above plant is about 1 lb. of metallic tin per cubic yard. The comparatively low extraction is mainly due to the fine state of the cassiterite in the gravel, and to the lack of proper classification, which is an essential for a high recovery even in a sluice box. The main object of installing the plant was to demonstrate the advantage of hydraulic surface prospecting under conditions prevailing at Rooiberg, and to show that by sluicing the overburden sufficient cassiterite may be won therefrom to pay for the work, thus rendering this form of effective surface exploration both inexpensive and thorough. In this respect the installation has proved a complete success. The company have recently decided to augment the plant by the addition of a Deister rougher (a sands shaking table of large capacity), whereby the quantity of overburden treated will be considerably increased and an improved recovery of cassiterite obtained at a very small cost. The writer is indebted to the directors of the Rooiberg Minerals Development Company, Ltd., for their permission to make use in this paper of the data collected whilst operating the plant. He also wishes to express his grateful acknowledgments to Professor Orr for preparing the lantern slides, and to the surveyor and mechanical engineer at the mine for assisting with the drawings.

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

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SHAFT DESIGN : SOME COMPARISONS.

The Case for the New Type of Shaft as Compared with the Circular and Seven-Compartment Types.

[By W. L. WHITE, Consulting Engineer to the Barnato Group of Mines.]

Having described some of the features of the new shafts, I will come to comparisons—always odious—and try to explain the reasons why in the circumstances with which we were faced one decided against both the circular type and the seven-compartment type of shafts.

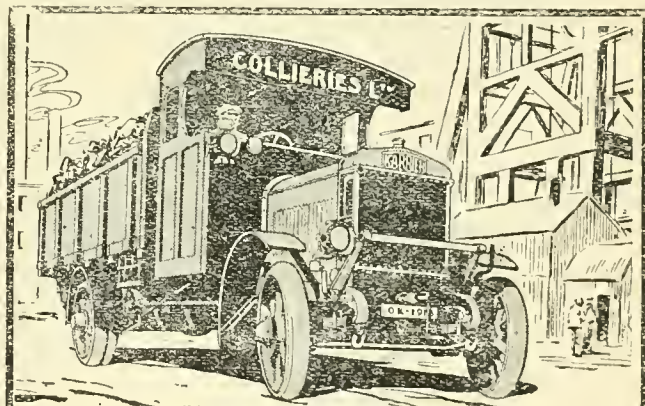
COMPARISON WITH CIRCULAR SHAFT.

(1) The determining reason was the much greater certainty of getting these shafts down in reasonable time, having regard to the fact that considerable quantities of water would probably be encountered. At Randfontein Deep north shaft, the water handled was about 800,000 gallons per day: Randfontein Central pumps about 130,000,000 gallons per month, and there is every expectation that when these new vertical shafts get below the mine workings, they will encounter large quantities of water. The same can be said of the New State Areas, where the water-bearing dolomite lies at about 600 to 700 feet below the surface. The three winders provided for each shaft may be considered as so many pumps of such flexibility that they will draw water from 500 feet or 5,000 feet, as the case may be. It is estimated that if the third engine be erected five balers could be used, capable of handling 2,250,000 gallons per 24 hours, from a depth of 1,500 feet, and still leaving one skip to sink with. In a round shaft without pumps about 12 buckets of water per hour, making 108,000 gallons per day, is about the limit of the engine from, say, 1,500 feet; and it will be less as one gets deeper. In the case of round shafts, pump chambers have to be cut every 500 feet and sinking pumps used in the bottom. In a 5,000 feet shaft, ten pump chambers would be necessary, and, even if only small quantities of water were cut throughout the sinking, ten pump installations made. In the Randfontein shafts any quantity of water up to 500,000 gallons per day would not too seriously impede the sinking. None of the round shafts completed on the Rand have had any water to speak of, and it would be interesting to see the sinking costs of a round shaft that had, say, 200,000 gallons per day throughout; in my opinion they would not compare with the wide rectangular shaft for costs, to say nothing of the delays incidental to equipping pump chambers at every 500 feet. It was recently reported that three of the round shafts being sunk on the Far East were stopped on account of water. (2) Each one of the four round shafts will be a downcast and not an upcast shaft. (3) Galloway stages at depths in circular shafts are somewhat unstable by reason of the spring in the ropes holding them—the difficulty would be exaggerated at 4,000 and 5,000 feet. (4) The ventilation pipe of 22 in. diameter is not so satisfactory during sinking as the 5 ft. x 6 ft. bratticed compartment. When it comes to development, the advantage of the wide rectangular shape is more marked. (5) For fast hoisting from great depths, the skip rigidly held by runners appears to me safer and preferable to hoisting with a central bucket—certainly it should give faster sinking, thus resulting in cheaper sinking, whatever may be the comparative costs at more shallow depths. (6) In round shafts little sinking is possible until all the main sinking plant is erected. At Randfontein the north shaft was sunk 473 feet, and the south shaft 1,000 feet, with temporary gears, and while the permanent sinking plant was being erected. This was a

very important point at Randfontein, where the new shafts are most urgently required. The actual sinking records of these two shafts are as follows:—

		NORTH SHAFT.		SOUTH SHAFT.	
		Monthly Footage.	Progressive Footage.	Monthly Footage.	Progressive Footage.
1917.					
September ...	...	50	68	53	81
October ...	...	17	85	19	100
November ...	...	50	135	108	208
December ...	...	77	212	89	297
1918.					
January ...	...	90	302	96	393
February ...	...	84	386	127	520
March ...	...	87	473	156	676
April ...	...	131	604	165	841
May ...	...	192	796	162	1,003
June ...	...	190	986	155	1,158
July ...	...	220	1,206	204	1,362
August ...	...	185	1,391	208	1,570
September ...	...	173	1,564	168	1,738
October ...	...	192	1,756	156	1,894
November ...	...	141	1,897	112	2,006

(7) In shovelling rock it must be conceded that the round shaft has the pull, and in the shafts under discussion an attempt has been made to incorporate to some extent this point by a bigger skip, standing lower in the shaft, and with three sides effectively open for shovelling over. In hoisting facilities the rectangular is ahead, in my opinion, when depths of over 3,000 feet are reached. Taking hoisting and shovelling together, it seems clear to me that the wide rectangular shaft is somewhat better suited for great depths than the circular type. (8) In breaking, the number of holes required in the circular form is greater than in the



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rectangular, due to the fact that in a 20 ft. round shaft about 30 holes are required round the circumference, taking the distance apart of these holes at 1 ft. 9 in., and, say, a further twenty to thirty holes for the centre of the shaft. In the rectangular on Randfontein from 40 to 45 holes altogether per shift is usually enough to bring a 2 ft. 6 in. round. (9) Costs: The following are the monthly and total costs per foot of the two shafts at Randfontein, including the concrete collars:—

NORTH SHAFT.				SOUTH SHAFT.			
	Monthly cost per foot.	Progressive cost per foot.		Monthly cost per foot.	Progressive cost per foot.		
1917.							
September ...	£11 12 5	£9 10 6	£19 5 10	£13 4 3			
October ...	101 13 7	27 19 1	96 2 9	28 19 5			
November ...	27 8 5	27 15 2	23 8 4	26 1 9			
December ...	27 10 10	27 13 7	29 11 8	27 2 9			
1918.							
January ...	£24 9 10	26 14 7	£30 18 7	28 1 3			
February ...	31 2 1	27 13 8	26 6 1	27 12 8			
March ...	26 9 10	27 9 3	27 8 11	27 11 9			
April ...	29 8 10	27 17 10	29 3 5	27 18 0			
May ...	26 8 10	27 10 10	27 11 0	27 16 10			
June ...	24 7 11	26 18 9	31 15 11	28 7 6			
July ...	27 6 7	27 7 0	25 14 0	28 4 6			
August ...	30 13 4	27 15 10	26 10 8	28 0 1			
September ...	31 0 4	28 2 11	30 8 5	28 4 9			
October ...	49 16 11	30 10 5	31 8 11	28 10 0			
November ...	39 11 3	31 3 10	*46 11 4	29 10 2			

† Includes cost of rope. £2,543. * Heavy ground and close timbering.

The strata is almost vertical in the north shaft, and dips at 70 degrees in the south shaft; latterly the rock in the north has been exceptionally hard, and in the south the ground has been so soft and heavy that the sets have been put in at 3 ft. 6 in. centres—just half the normal distance.

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These facts and the installation of two new ropes at the south shaft are the reason for the recent large increases in cost. It must be pointed out here that, with the exception of the runners R₁ and R₂, these figures are for the shaft complete, and that when the sinking is finished the shaft is in commission as a main working shaft.

AS COMPARED WITH THE SEVEN-COMPARTMENT SHAFT.

(1) The four seven-compartment shafts on the Government Gold Mining Areas were sunk for an average total cost of £32 11s. 6d. per foot. Timber cost 3s. 6d. per cubic foot. At Randfontein the shafts up to the end of November averaged £30 6s. 6d. per foot—timber costing 7s. 9d. to 8s. per cubic foot. With timber at 3s. 6d. per cube, the average cost would have been £26 1s. 6d. per foot. There are other charges incidental to the war, which may be overlooked. There is also the fact that the flat dip—about 12 degrees—on the Government Gold Mining Areas is a considerable help in sinking. Taking all factors into consideration, I am inclined to think that under similar conditions the wide rectangular shaft will come out from £5 to £10 per foot cheaper than the seven-compartment of equal area. The New State Areas' shafts may be fairly compared with the Government Gold Mining Areas' shafts, and it will be very interesting to see how the comparison works out. The Randfontein shafts may be compared with the Robinson Deep seven-compartment shaft recently sunk; and perhaps Mr. Leslie will be good enough to give us the figures for this shaft. (2) In the long cage compartment, the bratticed ventilation compartment, the freer passage for air generally after connection, and greater adaptability to the elliptical form in case of need, we have further advantages which have already been dealt with. In conclusion, I would like to say emphatically that I am not an advocate of one type of shaft for all conditions. The very essence of mining is adaptation to conditions as they exist; and in the present notes I have merely tried to give you, as clearly as possible, the reasons why the wide rectangular form of shaft was adopted in the conditions that existed.

Welgedacht Exploration Company, LIMITED.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the SEVENTEENTH ORDINARY GENERAL MEETING OF SHAREHOLDERS in the WELGEDACHT EXPLORATION COMPANY, LIMITED, will be held at Salisbury House, London Wall, E.C., in the City of London, on the 4TH MARCH, 1919, at noon, for the following business:—

- (1) To receive and consider the Directors' and Auditors' Reports, the Balance Sheet, and Profit and Loss Account, for the year ended 30th June, 1918;
- (2) To elect two Directors in the places of Messrs. P. G. Hamilton Carvill and L. R. Davies, who retire in accordance with the provisions of the Articles of Association, but are eligible and offer themselves for re-election;
- (3) To appoint Auditors for the ensuing year;
- (4) To transact all such other business as may, under the Articles of Association, be transacted at an Ordinary General Meeting.

The Share Transfer Books of the Company will be closed from the 4th February to 4th March, 1919, both dates inclusive.

BY ORDER OF THE BOARD OF DIRECTORS,

O. F. BROTHERTON

(For the Witwatersrand Township E. and F. Corporation, Ltd., Secretaries).

The Jeppe Arcade,
Commissioner Street,
Johannesburg,
27th January, 1919.

SOUTH-WESTERN TRANSVAAL DIAMOND DIGGINGS :
1918 RETURNS.

With the official returns from the alluvial diamond diggings of the South-Western Transvaal now to hand for the month of December, the total for the year is found to have amounted to 57,144 carats, value £410,792. This aggregate would no doubt have been larger had the influenza visitation not had its effect upon the diggings, especially in its interference with native labour supply, and in the following figures for the past 12 months the falling away during the concluding quarter of the year will be noticeable:—

	Carats.	Value.
January	4,572 ³ / ₄	£28,657
February	7,361 ¹ / ₄	48,367
March	6,050 ¹ / ₂	37,557
April	5,423 ¹ / ₄	33,983
May	5,387 ³ / ₄	36,298
June	4,744	35,388
July	4,446 ¹ / ₄	32,897
August	5,014 ¹ / ₄	39,233
September	5,196	41,286
October	3,316	29,703
November	2,634 ³ / ₄	21,701*
December	2,998	25,636

The output since 1911 has been as follows:—

	Carats.	Value.
1911	37,861	£198,834
1912	79,079	386,668
1913	81,943	422,616
1914	35,644	141,146
1915	29,920	117,817
1916	43,523	214,121
1917	62,743	396,237
1918	57,144	410,792

During 1918 there were 73 different areas figuring in the returns, and the finds they reported ranged from a value of £58,470 to 2s. 6d. The principal producing diggings with their aggregate for the year, were:—

	Carats.	Value.
Blesbokfontein	8,263 ¹ / ₂	£58,470
Kameelkuil	7,188 ¹ / ₂	50,099
Leenwfontein	6,934	49,376
London	6,056	43,670
Italie	5,399 ¹ / ₄	35,588
Syfergat	4,420 ¹ / ₂	32,600
Bloemhof	2,865 ¹ / ₂	20,049
Klein Italie	2,333 ¹ / ₄	18,030

	Carats.	Value.
Bloemheuvcl	1,166 ¹ / ₄	£10,455
Kareepan	1,376 ¹ / ₂	10,132
Dievedraai	116 ³ / ₄	8,075
Schweizer-Reneke	976 ¹ / ₂	7,724
Holloway's Rust	890 ¹ / ₂	7,090
Katdoornkraal	949 ¹ / ₄	6,751
Christiana	771 ¹ / ₄	5,837
Rietkuil	536 ¹ / ₂	4,097
Vechtvallei	463	3,884
Klipkuil	462	3,776
Mooifontein	544 ¹ / ₂	3,737
Naauwpoort	384 ³ / ₄	3,726
Doornbult	293 ¹ / ₄	2,049
Grootdoorns	265 ³ / ₄	1,851
Plessisdam	236 ³ / ₄	1,641
Goedehoop	244	1,553
Mimosa	197 ¹ / ₂	1,538
Panfontein	246 ¹ / ₂	1,387
Koksrust	246 ¹ / ₂	1,348
Koppiesvlei	207 ³ / ₄	1,226
Cawood's Hope	152 ¹ / ₄	1,216
Eastleigh	134 ³ / ₄	1,151
Diamantdoorns	117 ¹ / ₂	1,128
Rietput	135	993
Biesjeslaagte	135 ³ / ₄	898
Kuifontein	122 ¹ / ₂	855
Zwartlaagte	121	842
Zevenfontein	137 ³ / ₄	819
Middelbosch	91	662
Johannesrust	43	533
Rondevlei	74 ³ / ₄	497
Kromellenboog	99	456
Sandringham	80	456
Kafferpan	68 ¹ / ₂	442
Doornhook	59	398
Palmietfontein	40 ³ / ₄	378
Syferfontein	48 ¹ / ₂	291
Boschplaats	48	281
Uitspanning	27	267
Grootporte	52 ¹ / ₂	247
Homansvlei	40 ³ / ₄	232
Oliversfontein	24 ¹ / ₂	203

The remaining 23 carats ranged from Eerstebegin's 15 carats, value £105, to Spreeuwfontein's ¹/₂ carat worth 2s. 6d. At the Eastleigh diggings, close of Klerksdorp, the work has dropped almost to vanishing point.

MANICALAND GOLD OUTPUT FOR 1918.

The gold produced in Manicaland during the year 1918 was as follows:—

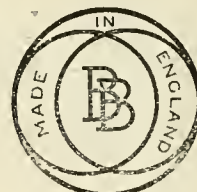
Name of Claims.	Present Owner.	Tributor.	Gold Produced.		Value.		
			Fine Gold.	Fine Silver.	Fine Gold.	Fine Silver.	Total.
REEF BATTERIES.			ozs.	ozs.	£ s. d.	£ s. d.	£ s. d.
Central	Manuel de Lacerda ...	Thos. Longmore	97·95	27·37	105 18 1	3 8 2	409 6 3
Guy Fawkes	Mozambique Macequece, Ld.	M. Cardozo ...	246·13	19·59	1,007 12 9	2 8 10	1,010 1 7
South Firenze	Ronald H. Pilgrim ...	—	2·35	—	9 14 6	—	9 14 6
Welcome	Manuel de Lacerda ...	Thos. Longmore	17·62	4·48	73 0 8	11 1	73 11 9
		Total	364·05	51·44	1,496 6 0	6 8 1	1,502 14 1
ALLUVIAL—							
Manica Alluvial and Omega	Andrada Mines, Ltd. ...	—	5,227·62	466·54	21,670 9 9	58 5 9	21,728 15 6
		GRAND TOTAL.....	5,591·67	517·98	23,166 15 9	64 13 10	23,231 9 7



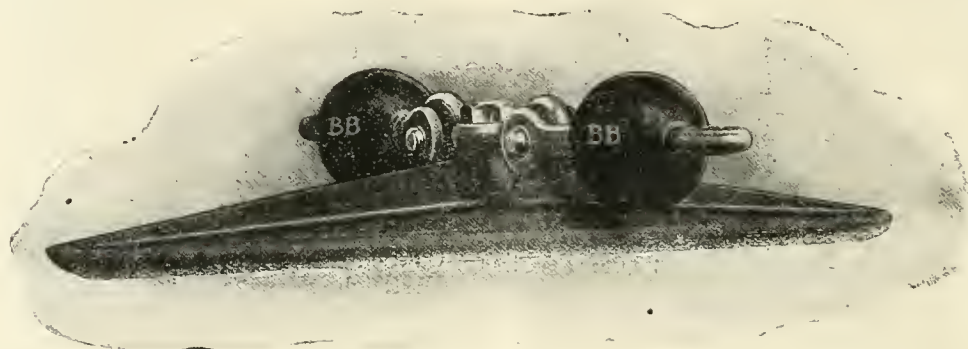
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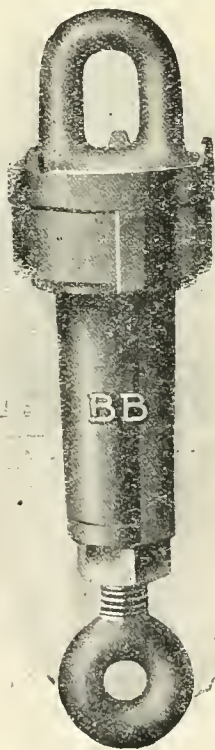
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Every Kind of Moulded
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Resistance Materials for all
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Insulating Linen, Paper, Silk,
Tape

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THE WEEK IN THE SHAREMARKET.

A Falling Market—Less Activity at Lower Levels.—An Improvement.

THE market, which closed somewhat firmer on Friday evening, did not maintain its promise on Saturday morning. There was not much inclination to deal and most of the transactions were at a lower level. City Deeps, African Farms and Modder Easts all came sellers at the last buying prices. Nothing was done in the Modderfontein stock, beyond a sale of four-year options; Government Areas fell off again and Springs and Van Ryn Deep were also lower. The market was unexpectedly firm on Monday morning with quite a good buying tendency, though mostly limited to ticky advances, with the exception of Pretoria Cements, which gained 2s. on the previous buying bid. The tone at closing was not so good. Prices fell away on Tuesday morning, notably in Sub Nigels, which, on the report of an unsatisfactory return, fell to 25s. 3d. Springs, Government Areas and Modder Easts were all lower. There was no improvement during the course of the day. In the afternoon Pretoria Cements were sold at 68s. Only twelve sales were recorded at Wednesday's call. S.A. Breweries, City Deeps, Van Ryn Deeps and Hume Pipes were harder. Geduld Props, New Modders, New State Areas and Sub Nigels, among the more important stocks, remained unchanged. The remainder were all lower. After the call Government Areas fell to 94s. 6d. and Sub Nigels to 24s. 6d. The whole market closed weak. Business was fairly active at Thursday's opening, with sales of Government Areas at 94s.; Springs, 64s.; Sub Nigels, 24s. 6d.; New States, 22s. 6d. At the call the two first-named dropped 6d. each. With the exception of Daggafonteins, East Rand Mining and Mines Selection, the whole list was once more marked down. Labour troubles again, and this time, as one member shrewdly observed, there is a political influence at work in the shape of the young Nationalists, who are making their presence felt on the mines and against the wish of the more sober-minded workers, who know there is no reasonable cause of complaint. The outside business for the week was limited. Sales: Makganyenes, 31s. to 33s.; Montekos, 22s. 6d. to 21s.; Phoenix, 1s.; Union Tins, 5s. 3d. Buyers and sellers: New Farms, 1s. 11d., 2s.; Lydenburg Lands, 1s. 9d., 2s. 3d.; Sakalavas, 5s. 3d., 6s.

Prices hardened somewhat on Friday morning. Alkalis had a big rise, which started overnight when they went to 38s., and making a further 2s. at the call. The following alterations were noted:—Sales: African Farms, 14s. 7d.; Main Reefs, 11s. 3d.; Crown Diamonds, 8s.; Daggafonteins, 26s. 3d.; Frank Smiths, 3s. 3d.; Lace Props, 20s.; Modder Bs., £7 13s. 6d. and £7 13s.; Modder East four-year Options, 5s. 9d.; Rand Nucleus, 1s. 10d.; Rooibergs, 6s. 3d.; S.A. Lands, 5s. 11d.; Sub Nigels, 25s. 6d., 10s. paid, 14s. 6d.; Springs, 64s. 3d.; S.A. Alkalis, 40s.; West Springs, 24s. 3d. Buyers and sellers: Geduld Options, 11s. 6d., 12s.; Government Areas, 93s. 9d., 94s. 6d.; Modder Deeps, £7 3s. 6d., £7 7s.; New Modders, £25, £26 7s. 6d.; Pretoria Cements, 67s., 69s.; Van Ryn Deeps, 67s. 3d., 68s. In the unlisted stocks, Makganyene Diamonds were wanted at 34s.

	Fri., 24th	Sat. 25th	Mon., 27th	Tues., 28th	Wed., 29th	Thurs., 30th
Con. Investments . . .	22 6A	22 6*	22 6*	—	22 6*	22 6*
Con. Langlaagtes . . .	18 3*	19 0†	17 6*	18 6*	18 0*	18 0*
Con. Main Reefs . . .	11 0*	11 0	11 0*	11 0*	11 0*	11 0*
Con. Mines Selection . . .	26 0*	26 0*	26 0*	—	—	25 6*
Coronation Freeholds . . .	1 6†	1 3*	1 5†	1 2*	1 2*	1 1*
Coronation Synds. . .	—	1 9*	1 9*	—	—	—
Crown Diamonds . . .	7 0	7 0	—	—	—	—
Crown Mines Deb. . .	—	—	—	—	£97½*	—
Daggafontein Mines . . .	25 0*	25 6*	26 0	25 9*	25 9*	26 3*
Do. Options . . .	5 3*	6 0*	6 2	6 0*	5 10*	6 6
De Beers Defs. . .	—	£16*	—	£16½*	—	£17½†
East Rand Coals . . .	2 2*	2 2*	2 2*	2 3*	2 3	2 2*
East Rand Deeps . . .	—	1 0*	1 0*	1 1*	1 1*	1 0*
East Rand Minings . . .	—	—	—	—	17 6*	18 6*
East Rand Props. . .	5 3	5 3*	5 3*	5 6*	6 0	—
East Rand Debs. . .	£66*	£66*	£66*	£66*	£66*	£66*
Eastern Golds . . .	1 3*	1 4	1 3*	1 3*	1 3*	1 3*
F. Smith Diamonds . . .	3 6†	—	3 3*	3 5	3 3*	3 3*
Geduld Props. . .	13 0*	13 0*	13 3	13 3	13 3	12 0
Glencoe Collieries . . .	—	—	6 0*	6 0*	7 9†	6 0*
Glynn's Lydenburgs . . .	25 0*	26 0*	27 0†	26 3†	26 3†	—
Govt. Areas . . .	97 0	96 6*	96 9	95 6*	96 0	93 6
Hume Pipes . . .	28 0*	28 3A	27 6*	27 6*	28 6*	27 6*
Jhb. Bd. Executors . . .	—	—	—	—	—	30 0*
Jupiters . . .	5 0*	5 0†	—	4 6†	—	—
Klerksdorp Props. . .	3 0*	3 0*	3 0*	3 0A	3 0*	3 0*
Knight Centrals . . .	5 7	5 6	5 6	5 3*	5 1*	5 0*
Knights Deep . . .	6 0*	6 0*	6 0*	6 0*	—	—
Lace Props. . .	22 3*	22 0	22 0*	22 0	21 3*	20 0*
Leeuwpoot Tins . . .	25 0	25 0*	24 9*	25 0	24 6*	23 9
Lydenburg Farms . . .	9 1	9 2	9 1	9 0	8 10*	8 0
Meyer & Charlton . . .	—	82 6*	82 6*	—	—	—
Middelvie Estate . . .	1 0*	—	—	1 0	1 0†	—
Modder B. . .	155 6*	156 0*	156 0*	156 0	152 6*	152 6
Modder Deeps . . .	148 9†	150 0†	147 0*	—	147 6†	147 0†
Modder Easts . . .	19 0*	19 0*	19 3	19 0*	18 9*	18 6
Do. Ops. (3 yrs.) . . .	4 3*	—	5 0†	4 7*	4 0*	4 0*
Do. Ops. (4 yrs.) . . .	5 6*	5 9†	5 7*	5 10*	5 9*	5 6*
Natal Navig. Col. . .	—	—	—	21 0*	—	21 0*
National Banks . . .	£11½*	—	£15A	—	—	—
New Boksburgs . . .	1 1	—	1 1*	1 1*	1 0*	1 0*
N. Eland Diamonds . . .	22 0*	22 0*	22 0*	22 6*	—	22 0*
New Era Cons. . .	—	—	10 6†	—	—	—
New Heriots . . .	—	13 3*	13 0*	—	—	—
New Kleinfontein . . .	11 9*	11 10*	12 0*	12 3*	11 9*	11 4*
New Modders . . .	£26½†	£26½†	£26½†	£26½†	£26½†	£26*
New State . . .	22 3	22 7½	22 6	22 6A	22 6	22 6A
Nigels . . .	4 0*	4 0*	4 0*	4 0*	6 0†	6 0†
Premier Prefs. . .	155 0*	155 0*	155 0*	155 0*	155 0*	—
Pretoria Cements . . .	65 0*	65 0*	67 0*	67 6*	67 6*	65 0*
Princess Estates . . .	2 11*	2 10*	2 11*	3 0*	2 11*	2 10*
Rand Collieries . . .	3 3*	3 0*	3 6	3 3*	3 3*	—
Rand Nucleus . . .	1 9*	1 9*	2 0†	1 10*	1 10*	1 6*
Rand Select. Corp. . .	81 6*	—	—	—	—	—
Randfontein Deeps . . .	5 3†	5 1†	—	4 9*	4 9*	4 9
Randfontein Ests. . .	14 0*	14 0*	14 0*	14 0*	14 0*	14 0*
Rooibergs . . .	6 3*	6 3*	6 5*	6 9†	6 3*	6 0*
Rooidepoort Uniteds . . .	2 6†	—	2 6*	2 6	—	3 0†
Rose Deeps . . .	18 6†	—	—	18 6†	—	—
Ryan Nigels . . .	3 3*	3 0	3 3*	—	3 4*	3 4*
S.A. Alkali . . .	30 0*	—	29 0*	—	29 0*	30 0A
S.A. Breweries . . .	33 0*	32 6*	32 6*	32 6*	33 0*	—
S.A. Lands . . .	6 1*	6 1*	6 1*	6 2*	6 1	6 2†
Shebas . . .	2 0†	1 6*	1 6*	—	—	—
Simmer & Jacks . . .	6 0†	—	—	—	—	—
Simmer Deeps . . .	1 0*	—	—	—	—	—
South Van Ryn . . .	12 9*	12 7*	12 9	12 7½	12 6*	12 3
Springs Mines . . .	66 0*	66 0*	66 6	65 9	65 0	63 6
Standard Bank . . .	—	—	—	£12*	—	£12*
Sub-Nigels . . .	27 0	26 9*	26 9*	25 3	25 3	21 6
Transvaal Lands . . .	25 0*	25 0*	25 0*	25 0*	25 0*	25 0
Transvaal G.M. Est. . .	—	13 6*	13 6*	11 0*	14 0*	14 0*
Tweefontein Colls. . .	24 6*	24 6	25 0†	24 6	24 0*	23 0*
Tweefontein Prefs. . .	22 6*	22 6*	—	22 9*	22 9*	22 9*
Union 5 per cent. . .	£103½*	£102	£102½*	£102½*	£102½*	£102½*
Van Ryn Deeps . . .	68 6*	68 3*	68 6*	68 9*	69 6	69 0†
Village Deeps . . .	16 3*	16 0*	16 0*	16 0*	16 0*	16 0*
West Springs . . .	24 10†	24 9*	25 0	25 0*	24 9*	24 4½
Do. Options . . .	10 3*	10 1*	10 0*	10 3A	10 0*	—
Witbank Collieries . . .	—	55 0*	—	56 0*	56 0*	56 0*
Witwatersrands . . .	20 6†	20 0†	20 0†	—	20 0†	20 0†
Wit Deeps . . .	—	9 0*	9 0*	—	9 6	9 0*
Wit. Townships . . .	27 6†	27 6†	27 6†	—	—	27 6†
Wolluters . . .	3 6†	3 5*	—	3 0*	—	3 6†
Zaaiplaats Tins . . .	15 6	15 5	15 3*	15 5	15 3*	15 3

*Buyers. †Sellers. A Odd lots. B Ex London.

	Fri., 24th	Sat. 25th	Mon., 27th	Tues., 28th	Wed., 29th	Thurs., 30th
African Farms . . .	15 0*	15 0*	15 3*	15 0*	14 9*	14 9
Anglo-Amer. Corp. . .	32 6†	32 0†	32 6†	—	32 6†	—
Apex Mines . . .	6 9*	6 9*	6 11	6 10*	6 9*	7 0†
Bantjes Cons. . .	2 2	2 2*	2 2*	2 2*	2 1*	2 3†
Brakpan Mines . . .	69 0*	—	—	—	72 6†	70 0†
Breyten Collieries . . .	11 9*	11 9*	12 0*	12 0*	12 0*	—
Brick & Potteries . . .	5 0*	—	—	6 0†	5 6†	—
British Sth. Africa . . .	—	23 0†	20 0*	20 0*	20 0*	20 6
Bushveld Tins . . .	0 8*	0 8*	0 8*	—	0 9	—
Cassel Coals . . .	35 0†	35 0†	35 0†	35 0†	35 0†	35 0†
Cinderella Cons. . .	—	3 0*	5 0†	5 0†	5 0†	3 0*
City & Suburbans . . .	7 9*	—	7 9*	7 9*	7 9*	7 9*
City Deeps . . .	50 0*	48 6*	48 9*	49 0*	50 0*	—
Clydesdale Collieries . . .	23 6†	23 6B	23 0*	—	22 6*	22 6*

Engineering Notes and News.

THE ELECTRICAL EQUIPMENT OF THE NEW MODDER CIRCULAR SHAFT SECTION.

FROM the official description of the plant of the New Modder Circular Shaft Section we take the following account of the electrical equipment:—

The power supply to the circular shaft plant is taken from the Rand Mines Power Supply Company, Limited. Two independent sets of overhead lines are brought into the sub-station through isolated high tension switches. The power is delivered at 40,000 volts and transformed down to 2,000 and 500 volts for supply to the motors. The 500 volts is again transformed down to 200 volts at suitable points for lighting purposes. The sub-station is a substantial brick and iron building, consisting of five sections, each containing: (1) The high tension control gear; (2) the transformers; (3) the low-tension control gear; (4) the distribution switch house; (5) the meter room. The high and low tension gear and the transformers are of the standard type used by the Power Company throughout the Rand Mines, except that the incoming overhead high tension lines are brought into isolated switch houses, fitted with the necessary lightning arrester gear, before entering the main sub-station building. The distributing system has been designed upon most modern lines to meet all known contingencies, and as far as possible avoid interruption of supply to any of the mining or reduction operations. The distributing switch house is of the cubicle type, and the oil switches are operated by remote control gear, which isolates each oil switch to its own cubicle, thus avoiding damage to adjacent gear should an explosion occur in a switch when opening under abnormal conditions. The supply to the mine is controlled by 22 feeder switch panels; six for the 500 volt supply and sixteen for the 2,000 volt supply. The 2,000 volt end of the switch house is divided into two distinct sections, the main bus bars being connected by heavy links, each section being independently fed from the Power Company. The 5,000 h.p. Ward-Leonard winder, air compressors, ventilating fan, underground pumps, underground winders and winches are supplied with power from one section, while the whole of the surface works are supplied from the other section, thus enabling the mine officials to close down either section without interfering with the other. All cables are of the 3-core, paper insulated, lead sheathed and steel armoured type. Steel tape armouring is used for surface cables, and steel wire armouring for the shaft cables. The copper section of the conductors in the cables varies from 0.25 square inch, which is the largest, to .025 square inch, the smallest used. Feed cables of the required copper section connect the main switch house switch panels with four distributing link houses. The four link houses are constructed of brick and iron, each to control a section of the plant as follows:—

Winder Room Link House.—2,000 volts: 5,000-h.p. Ward-Leonard winder; three 1,200-h.p. compressors.

No. 1 Link House.—2,000 and 500 volts: Plant immediately around shaft; underground plant and lighting. 200 volts lighting: Lighting compressor and winder room; sub-station and surface lights around shaft.

No. 2 Link House.—2,000 and 500 volts: Crusher station; conveyor belts; stamp mill; tube mills; 1st lift pumps. 200 volts lighting: Fire station and all lighting of the above.

No. 3 Link House.—2,000 and 500 volts: Butters' filter plant; general pump house; extractor house; slimes dam pump house; haulage gear motors. 200 volts lighting: Door tanks and all lighting of the above. Each link house is divided into three sections, each one to control either the 2,000 volts, 500 volts or 200 volts lighting supply. Link Cages.—The power is supplied from each link house to the motors in that particular section of the works by cables leading through local link cages to switch boards controlling

complete sections or single switch panels controlling isolated motors. The link cages are of Rand Mines standard expanding design, constructed of angle iron frames with sheet iron covering; a single section cage contains six links, two cable end boxes and bus bar. This link cage may be extended at any time by removing the sheet iron on either or both sides and bolting on other sections. Switch Board Enclosure.—With the exception of the main winder compressor room, all switch boards, whether single panel or composed of a number of panels, are of the Rand Mines standard design, and are of the expanding type, composed of angle iron frames with planished steel or enamelled sheet iron coverings. These switch panels are built in three sizes, as follows:—

Horse Power.	Ammeter Scale.	Current Transformer Ratio.
50 to 80	0 to 30	30 to 5
85 to 150	0 to 60	60 to 5
160 to 400	0 to 120	120 to 5

and each contain one 200 ampere oil switch fitted with three overload and one no-volt trip coil, one ammeter, three current transformers, one potential transformer, two high-voltage fuses and two cable-end boxes. When panels are grouped together a bus bar and link section may be added above the panels, also of angle and sheet-iron construction. In many instances these panels are fitted with an integrating watt-hour meter for registering the input of electrical energy to that particular process and a terminal board for periodical checking of the watt meter by a portable standard. Motors.—With the exception of the two 2,000-h.p. direct current motors on the main winding engine, all the motors are A.C. three-phase, 500 volts up to 50-h.p., and 2,000 volts from 50 to 5,000 h.p. The motors are of both the slip-ring and squirrel-cage (short-circuited rotor) types. In designing this plant, the squirrel-cage type of motor has been taken more advantage of than previously, and in every instance where the starting torque required was within the limits of the short-circuited rotor the squirrel-cage motor is used. By this means it is anticipated that the motor maintenance will be reduced to a minimum. The motors are constructed in accordance with Rand Mines standard specification, and, when possible, former or semi-former wound coils are used, especially impregnated to prevent moisture penetrating the windings. Both ends of the stator windings are brought out to terminal boxes mounted on the stator frame; this is not only beneficial for testing, but permits of the motor being used with right-hand or left-hand cable leads when moved from one position to another. In the case of slip-ring motors a heavy type of brush gear is adopted, and all brushes are fixed above the horizontal centre line of the rotor. In many instances brush raising and short-circuiting gear has been avoided to save maintenance, by adopting an iron-clad short-circuiting switch mounted upon the outside of the stator frame. When motors are mounted upon stageings, special rigid construction has been resorted to, to prevent vibration, as undoubtedly much of the heavy maintenance costs on some motors is due to this cause. Motor Starters.—In the case of slip-ring motors, the usual three-phase liquid starter with dipping blades is used. But with the squirrel-cage motor the auto-transformer type of starter is used, connected to the motor by suitable tappings to give the required voltage reduction.

General.—In laying out the plant great care was taken to place the sub-stations at the centre of the load, and the K.V.A. feet to the reduction works centre is equal to the K.V.A. feet at the winder room load centre. Power is distributed in bulk to the various link houses and then sub-distributed to the various link cage centres. Each main

link house is arranged in such a manner that by means of indicating apparatus and change-over links, various sections may be connected to various cables. There are no inter-connecting cables used. It will be noticed that all switch cables, links, etc., are numbered, lettered or tagged in such a manner that by means of standard distribution prints which are placed at all supply points, the operator is able to see at a glance the source of supply and trace out any cable or other connection to enable him to operate with safety. The great point aimed at has been to make standard all markings of panels, switches, cables, linking centres, link cages and motors, etc. All shaft cables are of the 3,300 volt class, and are designated " U " or underground cables. All surface cables are of the 2,200 volt class, and are designated " S " or surface power cables. All lighting cables are also of the 2,200 volt class and are designated " L " or lighting cables. Each feeder panel and main motor control panel has been equipped with test panels, so that check meters may be inserted when required. Standard motors, panels, switches, links, etc., have been used throughout. All main supply feeds are in duplicate, the cables being so arranged (wherever possible) that the supply to one point is carried over two cables, both of which are normally loaded, but if one cable should develop a fault, the other cable can in most cases carry the load with a 90° F. temperature rise as allowed by the standards adopted by cable makers; and in purchasing the cables, the " maximum amperes per pence " was the determining factor. Owing to the great number of trifurcating boxes required and the difficulty of supply under war conditions, a standard trifurcating box was designed. It is to be noted that all parts of these boxes have been made locally. These boxes are made in two sizes with special glands, viz.: No. 1 for .025 square inch to .075 square inch cable, and No. 2 for .075 square inch to .25 square inch cables. A straight-through box with " T " connection and

with similar glands has also been made. Low voltage lighting systems (57 volts) have been installed in the "Mill" and certain other parts of the plant, when a robust type of metal filament lamp is considered necessary. Underground cable, link cages, switch gear, motors, etc., conform to the same standards as the surface plant. The use of the telephone as an aid in switching operations is recognised and adopted. Earthing.—The importance of an efficient earthing system was recognised, and special consideration has been given to the means of attaining this. Earthing plates have been carefully laid in coke breeze in selected positions, and each provided with a water pipe to ensure good earth. Metering.—The power supply to the mine is metered at the sub-station, each independent feed from the Power Company is measured separately by three independent meters, viz.: the Consumer's meter, the Power Company's meter, and a Joint meter, the average being taken of the three readings, providing the accuracy of each meter is within two per cent. of the mean accuracy of the three meters.

Swaziland Tin.

The following are the results of the operations of this company for the month of December, 1918: Concentrate recovered, 28 long tons; estimated profit (taking tin at £220 per ton), £678; adjustments in respect of previous shipments, £355; total estimated profit, £1,033.

Geduld Dividend.

The Geduld has declared a dividend (No. 9) of 6½ per cent., or 1s. 3d. per share.

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1 GARDNER OIL ENGINE, 6 H.P., in Good Order. PRICE	£50	ELECTRIC LOCOS (2), 30 H.P., 24in. gauge, 220 V., D.C. PRICE, EACH	£50
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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Insizwa Nickel, Copper, etc., Mining Co., Ltd.

To the Editor, *S.A. Mining Journal and Engineering Record*.

Sir,—My attention has been called to a letter in your Journal signed by the secretary of the above company. I notice that the secretary says that he has only received one complaint that the company's proceedings are not published, and as I once made such a complaint I am possibly the shareholder to whom the secretary refers. The paragraph in your notes apparently asked for the names of the directors of the company, and the secretary now evades giving a full reply by merely stating that a Mr. John Taylor has been appointed, and his appointment is the only change since 1917. Is there any reason why the secretary should not openly give the full list of directors' names? My experience with this company is that an air of mystery and secrecy is always maintained, and evasive answers are always forthcoming. Such a method of conducting the company's business, or any company's business, most inevitably give rise to a feeling of mistrust in the minds of shareholders. I do not doubt that the company's affairs are managed in a perfectly honest and above-board manner, but the system of fencing questions and evading the giving of full straightforward replies is most puzzling. In 1914 the secretary wrote me that the directors did not permit the proceedings at general meetings to be published because "it is not considered advisable in the interests of the shareholders that their business should be made public." This is surely an extraordinary attitude for the directors of

a public limited liability company to take up. I understand that owing to lack of railway facilities the mine is closed down for the time being, and the company is in a semi-dormant condition. At all events the management of the company's affairs cannot be much of a burden to the directors. In 1914 the directors were awarded a bonus of fully-paid-up shares. In their last annual report the directors hinted that it was time that they were awarded another parcel of fully-paid-up shares. Not being able to go to Kokstad to attend the annual general meeting I wrote protesting against any further shares being awarded the directors until they had placed the company on a sound dividend-paying basis. No notice was taken of my protest. I wrote the secretary asking what transpired at the annual meeting, and he replied that "a certain number of shares" were unanimously awarded to the directors per meeting attended by each director or his alternate. Here again you will notice the evasive answer. Why could not the secretary frankly tell me the exact number of shares awarded? I hope the directors will now instruct the secretary to drop his evasive and fencing tactics and prove that all is open and above board by sending your Journal the full list of directors' names, and full details as to the number of bonus shares awarded each director at the general meetings held in 1914 and again in 1918. The publication of this information could not possibly prejudice the interests of the shareholders.—Yours, etc.,

ANOTHER SHAREHOLDER.

Sydney-on-Vaal,
21st January, 1919.

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SODA OCCURRENCES IN THE UNION.

The Position at the Pretoria Salt Pan—Difficulties Said to be Overcome—A New Discovery in the Union.

SODA ash, as the final product in the chemical manufacture of sodium carbonate is termed, is the raw material from which a large part of caustic soda is made, some five tons of soda ash, roughly, being required to produce four tons of caustic soda. Soda ash is also a most important factor in the bleaching and paper-making industries. Since caustic soda is largely used in the manufacture of soap it will be evident that for this purpose alone the demand for sodium carbonate is already fairly considerable in South Africa, and is likely to become much greater. It is stated by Dr. M. Rindl, Professor of Chemistry at the Grey College, Bloemfontein, in a communication to the *South African Journal of Industries*, that the amount of caustic soda imported into the Union during 1916 was, roughly, 3,500 short tons. In addition to this it was proposed to prepare sodium cyanide on the Rand, and if it were possible to make South Africa self-contained in this respect, a quantity of from 5,000 to 6,000 tons would be produced locally, for which some 4,000 tons of caustic soda would be required, making the total consumption in the Union 7,500 tons. There would thus be a local demand for, say, 10,000 tons of soda ash. In addition to this there is a foreign demand which could conveniently be met from this country if the output of soda were sufficiently large. In a report which was published recently, with the approval apparently of the board of the South African Alkali, Ltd., it was stated that the Eastern markets required more than 5,000 tons a month. It is somewhat regrettable, therefore, that the soda resources of the Salt Pan in the Pretoria district, which are controlled by the South African Alkali, Ltd., and are said to be worth something like £2,000,000 down to a depth of 50 feet, to say nothing of the soda assets at a greater depth than this, should at the moment be practically incapable of meeting any important part of this great demand. The position of the concern was lucidly explained at the annual meeting of the company in December last, when Mr. Lindbergh, the chairman, explained that things were in a transition stage. A new process was being arranged for by the installation of the first portion of an entirely new treatment plant based upon the centrifugal separator methods of the consulting engineer, Mr. W. Mauss. It seems that the process, as far as it has been tried, is an efficient one, but further capital is required for the purpose of having the separators constructed and erected. So far, we have not heard whether the endeavour to raise the necessary funds has been satisfactory. From the productive point of view the operations of the company, as has already been indicated, do not seem to be specially important at present. There are no published data as to the more recent output of the pan. In a report for 1917 by Mr. T. Trevor, Inspector of Mines for the Pretoria and North-Eastern Transvaal districts, it is said that, up to the end of 1916, only the beds of "trona," or massive crude carbonate of soda were worked. These beds are erratic in character, he remarks, and limited in extent, and it was obvious that the real wealth of the pan lay in the mud with which the crater-like "pipe" is filled to an unknown depth. The plant which was first of all devised for treating the soda saturated mud was not successful, to judge from the statements of Mr. Lindbergh at the meeting already referred to, and on this account the Mauss process was adopted. According to Mr. J. A. Campbell, chief chemist of the British S.A. Explosives Co., who was called in to report upon the position some time ago, "the only real difficulty in obtaining technically pure soda from the lake lies in the presence of a large amount of organic matter in the deposit. Special methods are necessary to deal with this. The abandoned process attempted to obtain a leachable product by roasting the mud, extracting with water, and concentrating in pans to the point where the soda could be crystallised out without bringing down any of the salt in the mother liquor. The

cost of treatment limited the process to fairly rich material, the heating decomposed a large part of the sodium carbonate, and the concentrating plant was not of the best design." In the new process the soluble portion of the mud is dissolved out by means of the addition of water to the mud with subsequent decantation of the liquor.

A NEW TYPE OF DEPOSIT.

Various explanations have been attempted in order to account, firstly, for the peculiar crater-like shape of the pan, and, secondly, for the presence therein of the sodium carbonate and salt which is found therein, either in a solid form or mixed with mud in a soluble condition. For an interesting account of the various theories that have been propounded we may refer to the anniversary address of Dr. P. A. Wagner, as President of the Geological Society of South Africa, on the 29th January, 1917, under the title of *Some Problems in South African Geology*. Another and equally interesting type of deposit, in which sodium carbonate is the principal constituent, has been found in the Union somewhat recently. It consists of large bodies of efflorescent alkali in a granite country, and has apparently been derived from this rock. Dr. Wagner himself discusses the possibility of an alkali deposit as a result of the decomposition of the surrounding granite, due to atmospheric weathering, in connection with the occurrence at the Salt Pan, but concludes, for various reasons, that the theory will not hold in that particular case. With regard to the more recent discovery, however, there seems no reason to look for any other source than the surrounding granite. The drainage from this rock, in its disintegrated form, runs below the surface of the soil until it emerges on the lower slopes of a long depression or valley, and here, especially in the winter months, a thick deposit or efflorescence, amounting to a very large tonnage during the dry season, makes its appearance. The soil below, together with the detritus from the granite and the clays resulting therefrom, are found impregnated with sodium carbonate in solution, and the water which percolates through this body of waste material is charged with the same substance. Other constituents also, such as sodium chloride, or salt, are found in the alkaline deposit, but they are of little importance in comparison with the principal constituent. The remarkably clean condition of the efflorescent material and the possibility of obtaining a similarly clean form of alkali from the water which percolates through the formation renders the occurrence one of special value. A special feature of the deposit, also, is the fact that it is constantly renewed, year by year, and since this has been going on for as long as the memory of the local inhabitants extends, with little or no diminution except as far as attempts have been made to check it, it may be presumed that the source is practically an inexhaustible one. Surveys and other investigations have yet to be made to determine the extent and capabilities of this occurrence, but the evidence already to hand goes to indicate that there are here the makings of a very considerable soda industry, in which the facilities for producing and transporting the commodity are unusually favourable.

Grain Elevators.

In reply to Mr. Naser in the Assembly, the Minister of Agriculture said that the Government was prepared to accept the recommendations of the Grain Elevators Commission. A consulting engineer had been appointed to investigate local conditions and details as to localities, etc., which would be considered on receipt of the engineer's report.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Builders' Threatened Strike—Trend of Business and Shipping—Oils, Colours and White Lead—Linseed Oil a Drug in Market—Explosives, Iron and Steel—Timber and Electrical Goods.

In the commercial world the outlook was more cheerful last week, but towards the middle of this week the strike epidemic quickly created a pessimistic wave. The news on that subject from Britain brought our builders' threatened strike into more prominence. Contractors and builders gave notice in accordance with their strike clauses to stop work on February 1, and what was of equal importance was that tendering was brought up with a round turn, and naturally the tenders given in and not accepted were also affected. Again, the shop assistants' deputations to those keeping open after 5.30 p.m., as well as the returned soldiers' parade searching out slackers, assisted to emphasise matters and create a nervous feeling, although everything was done quietly and in order. All this has been quite sufficient to practically stop the future building trade plans, as naturally it has called a halt. Fortunately there are quite good hopes of a settlement, as there is a big meeting on Friday evening, and it may be that second thoughts may prevail for the benefit of all concerned. Whatever happens, Johannesburg will take it quietly, as labour troubles are things unfortunately to be expected. The overseas strike affairs may have settled down considerably, as it takes a week to get cables through from London, therefore much progress can have been made in the meantime. The Peace Conference seems to have risen to the occasion by inviting a committee of the leading trade unionists to assist in their deliberations. This shows a very great earnestness to deal with this burning question in a liberal and fair spirit. In the meantime the public must show what patience it can and eschew the dogmatic or dictatorial style so apt to become uppermost on whichever side one's feelings are inclined. However, the sooner this strike spasm comes along the sooner it will get behind us, as it, like the 'flu, has to be faced and got rid of as soon as practicable.

TREND OF BUSINESS AND SHIPPING.

Business in the mining material trade is bad, as the last official pronouncement is that the mines in the Witwatersrand area have two and a half million pounds' worth of stores, which is five times as much as compared with pre-war days. A leading merchant says that it is rather visionary to anticipate much activity in trade, especially in the leading lines of mining goods whilst we have two and a half millions overhanging our market, as well as such quantities of railway and war material to be brought into the world's markets. For example, there is already one and a half millions' worth of railway materials purchased by the South African Railways from the British Government, much of which is said to be on the way, and it is self-evident that this is so much loss in commissions to our South African merchants. But what is troubling us most is the superabundance of commercial shipping, and this cannot well be gainsaid, seeing that Reuter announces that Trans-Atlantic freights have been reduced by 66½ per cent. This has created an uneasy feeling amongst the smaller merchants, as all old orders will quickly materialise into our overburdened market. The fact is that financial overseas obligations have to be met, as well as rent, salaries, living expenses and so forth; therefore in not a few cases goods have to be sacrificed, and as no one is buying anything beyond immediate requirements, the local position is anything but encouraging. It means that the South African market is centred in Johannesburg, and secondly at the coast, therefore at the moment the rise or fall of values in America or Britain is not of paramount consequence, as the immediate obligations are at our very doors and have to be met.

OILS, COLOURS AND WHITE LEAD.

Business is very quiet indeed, as people will only buy just for immediate requirements, and what is a peculiar feature is that they are quietly endeavouring to return por-

tions of their over-purchases of three to six months ago, with all manner of excuses and even faulty complaints. According to circulars from the big distributing houses, paraffin has been advanced 4d. per case and petrol 6d., in consequence, so it is explained, of the extra railway carriage. Linseed oil is somewhat of a drug in the market owing to liberal arrivals from America and elsewhere, so much so that it is being auctioned at Capetown. Generally speaking, stocks are plentiful, but two houses here do not wish to give quotations, simply because they are so changeable and therefore they are not issuing price-lists for February, also in anticipation of the builders' strike, which has practically brought business to a standstill. A London manufacturers' representative states that his last quotation for white lead in oils is 86s. per cwt. and 98s. for 2lb. tins of ready mixed paints. He also remarked that his firm's letter states that when the British Government lifted the embargo off the raw materials controlled in quantity and price by it, it was like the bursting of a dam, as raw materials came into the market very freely, not of necessity at lower prices, as some went higher, but the release relieved the tension and all the red-tapeism. The manufacturing house has so many orders on hand that the representative cannot take more for the present.

EXPLOSIVES.

As the shipping position has become altogether easier, it will assist explosives both as to regular supplies and no doubt easier values eventually. It appears that the all-important factor of glycerine has been placed in a different category, owing to the stoppage of the munition factories, therefore it is expected that the Government accumulated stocks will be soon released. The manufacture of glycerine has been wonderfully stimulated during the war period, and as it is much required in commerce the output in the future will be on an ever-increasing scale, therefore the high values must have a tendency to come down.

IRON AND STEEL.

Imported bar iron has fallen from about 62s. to 55s. per 100 lbs. South African makes remain the same after a drop of 5s. Hoop iron is now 75s. as compared with 95s. three months ago. A quotation from merchant to merchant was made for 2in. wire nails for delivery in Johannesburg at 6½d. per lb. Piping, both new and second-hand, is quite under a cloud owing to so much arriving from America, therefore quotations are unobtainable. It is mostly a matter for keen negotiation, as holders are cutting losses, and although values are going up in England for the new kind, yet some sizes are cheaper here than overseas. Tubular wheelbarrows are

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down from 65s. to 45s. each. Merchants are rather contenting themselves with purchasing locally than indenting oversea at the present time.

TIMBER.

Business is very slow indeed in consequence of the bother about the builders' strike. Quotations are coming forward per cable from all the previous shippers in the Baltic zone as well as London. The quotations are about a penny per foot less for deals, part being off freight and part off cost. Hence the price in Johannesburg now is 1s. 8d. per foot upwards, according to quality and length. Flooring 10d., ceilings 6½d., and beaver boards 8d. The tone in the second-hand market is better than the new, as buyers who have been holding back on account of lower values have reluctantly come to the conclusion that no amelioration can be expected in the immediate future. Although buying is not active, it is not at all unsatisfactory, as enhanced prices have been demanded and paid. Best deals are ruling as high as 1s. 3d. and good roofing iron at 1s. to 1s. 1d. per foot.

ELECTRICAL GOODS.

Materials are coming through in increasing quantities from Britain and America, therefore jobbing work can be undertaken more freely. Business is not quite so good, as here again the builders' strike is the overhanging cloud against activity. The position was summed up by a leading merchant in electrical ware that people seem to realise that something is going to happen and are awaiting events, hence sales are on the lean side.

VARIOUS TRADE GLEANINGS.

A big consignment of miners' oilskin suits arrived from America and all readily sold to the mines. Company promoters seem prone to patronise the O.F.S. for registration. Motor car agents are looking forward to early arrivals of consignments now that more shipping is available, to compensate them for the lean times of the war period. Sir Harry Ross Skinner is returning to Johannesburg next week, when it is understood that the question of the low-grade mines will be seriously tackled.

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DECLARATION OF DIVIDEND No. 9.

NOTICE IS HEREBY given that Dividend No. 9 at the rate of 6½ per cent. (1s. 3d. per share) has this day been declared, payable to Shareholders registered at the close of business on the 14th February, 1919, to holders of Coupons No. 9 attached to Share Warrants to Bearer, and to shareholders who have subscribed by that date to the recent issue of new shares, after receipt of the necessary returns from the London Office. Dividend Warrants will be despatched to registered shareholders in South Africa as soon as possible.

The Transfer Books and Register of Members will be closed from the 15th to the 22nd February, 1919, both days inclusive.

By Order of the Board,

UNION CORPORATION, LIMITED.

Secretaries.

per C. L. CHALMERS.

Head Office,

94, Main Street (P.O. Box 1125).

Johannesburg,

26th January, 1919.

The LYDENBURG GOLD FARMS COMPANY, LIMITED.

(Registered under the Limited Liability Laws of the Transvaal.)

NOTICE TO SHAREHOLDERS

NOTICE IS HEREBY GIVEN that the ORDINARY ANNUAL GENERAL MEETING of Shareholders in the above Company will be held in the Board Room, Stock Exchange Buildings, Fox Street, Johannesburg, on FRIDAY, the 7th DAY of MARCH, 1919, at 3 p.m.

BUSINESS.

1. To receive and consider the Balance Sheet, Statement of Profit and Loss and Directors' and Auditors' Reports for the year ended 31st December, 1918.
2. To elect two Directors in the place of Messrs. H. F. Watson and W. McEwan, who retire in rotation, but who are eligible for re-election.
3. To appoint two Auditors, and to fix the remuneration for the past audit.
4. To transact any other business which may be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Transfer Registers of the Company at the Head Office, 125 Stock Exchange Buildings, Johannesburg, will be closed from the 1st day of March to the 22nd day of March, 1919, both days inclusive.

Nominations to fill the vacant seats on the Board must be delivered in writing at the Head Office of the Company at least three clear days before the date of the Meeting.

By Order of the Board,

GEO. PARKES, F.C.I.S.,

Johannesburg,

17th January, 1919.

Secretary

Company Meetings.

WITBANK COLLIERIES.

The annual meeting of shareholders in the Witbank Colliery, held Jan. 29, was presided over by Mr. A. F. Mullins, who in moving the adoption of the report of the directors and the accounts said:—Your chairman has asked me to apologise for his absence to-day, which was unavoidable. You have probably thoroughly digested the reports and accounts, but I will briefly touch on the salient points set forth in them. Once again the general position of the mine can be described as very satisfactory. The coal discloses are of the usual high standard quality and of good thickness, and development has been maintained well in advance of mining requirements. There was an increase of 20,407 tons in the quantity of coal dispatched from the mine, the total, including duff, amounting to no less than 907,738 tons. From the consulting engineer's report you will see that this result was obtained by working the equivalent of only 236 shifts for both pits, and from this it is clear that we have in hand a large margin for increase of output. The shortage of shifts worked was due to several causes, but by far the chief one was the inability to get more coal away on account of the inadequate and irregular supply of railway trucks. Emphasis has been laid on this for several years, and I do not propose now to labour the subject further. The world strife of the last 4½ years is happily over, and one hopes for all time, and no doubt the Railway Administration will take advantage of the large stocks of railway material set free from war purposes to supplement their rolling stock and give the coal mines a larger and a more regular service. The extra revenue to the Railways to be gained thereby would be very great. It is not only the loss of the revenue from the extra coal which we could sell that affects us, but the broken shifts not unnaturally have a very serious effect upon the efficiency of the mine. With a view to minimising the broken time as much as possible, and of assisting the Railways to some extent by more rapid loading, we are erecting bunkers of large capacity. This will prove of benefit to the mine, but it will not overcome the difficulties resulting from inadequate track capacity. Only additional trucks and locomotives can do that.

Mashonaland Consolidated.

The report of the Mashonaland Consolidated (1912) for the year ended 31st March, 1918, states that the lessees of the Glendarra mine milled some 4,320 tons of ore, from which bullion to the value of £1,843 13s. 9d. was obtained. The lessees surrendered their lease in October, 1917, but the claims have recently been relet, and milling should soon be recommenced. The company carried out some development work on the Toto claims, but the results were not satisfactory, and work was suspended. No land was sold, and the unsold land at 31st March last amounted to 9,771 acres. Since that date 7,801 acres have been sold for a total price of £7,191, leaving unsold 1,970 acres unsurveyed. At the last annual meeting Mr. Sidney S. Kennedy expressed the opinion that further working capital was required and undertook to submit a scheme. A committee was appointed to consider Mr. Kennedy's proposals, and the directors undertook to submit for the shareholders' consideration whatever scheme was approved by the committee. The scheme has been unanimously approved by the committee, and the directors after full consideration recommend its adoption. Mr. Kennedy, in support of the scheme, claims that it has all the merits of a reconstruction scheme with an assessment without compulsory subscription of capital by existing shareholders, with the following advantages: It preserves the existing company and obviates liquidation, with its attendant and unavoidable expenses of registration of a new company, transfer of assets, etc. 2. No reduction of capital takes place and no writing down of assets, therefore no application to the Courts is necessary. 3. The present articles, giving one vote for each share, will still apply, and

Effect of the Epidemic.

During October considerable disorganisation was caused by the influenza epidemic. The mines were able to carry on continuously, but naturally at a very reduced output. Some fifty of the white employees were attacked, but happily all recovered. The natives were not so fortunate, as out of 795 cases 18 died. Your manager and his assistants were able to afford great help in dealing with the outbreak in Witbank township. All machinery and plant has been thoroughly well maintained, and during the year the underground air distributing system has been improved, some 5,500 feet of 6in. compressed air column having been installed. The manager reports that the improvement in the coal cutting efficiency has fully justified the expenditure. Alterations and improvements have also been made to the general surface plant.

The accounts show a profit for the year of £99,371, which is an increase of £14,878 over that of the previous year, and, incidentally, the highest recorded for the mine. Adding to this the unappropriated balance of £69,578 carried forward, we get a sum of £168,949, which has been dealt with as follows. We spent on capital account a balance of £1,217, in Government taxes £7,889, and in dividends £57,750. These three items total £66,856, and leave an unappropriated balance of £102,063 to be carried forward, that sum including £48,691 net cash after allowing for liabilities, the remainder consisting of cash assets. The further details are clearly set forth in the directors' report. Two dividends were declared during the year, the first 12½ per cent. and the second 15 per cent., a total of 27½ per cent. The yearly dividend has never exceeded 30 per cent., and your board has every hope that we may reach this figure again during the current year.

Production of Tar.

We have decided to start once more on the production of tar. Our coal is very suitable for that, and there is, as you know, a large demand for tar. There is little doubt that we shall find ready purchasers for our product. We had hoped to have made a start before this, but have had the greatest difficulty in obtaining the necessary retorts. Some of

these have now come to hand, and we expect to be in a position to start producing within the next three or four months. We have spent a certain amount on new quarters for married employees, and intend by degrees to do more in this direction. We cannot expect to keep good men without doing what we can for their comfort and health. At present a number of the employees have to lease their houses from individual owners in the township, and the rents are not so low as they would be if the company could provide the necessary accommodation. Owing to the increasing demands for property, residential and commercial, at Witbank, it has been decided to increase the size of the present township, and an application has been made to the Townships Board for an extension consisting of 119 lots of various sizes. It is intended that this extension shall include 15 lots already sold to the South African Railways for workmen's quarters.

Total Coal Trade.

The total trade done by the Associated Collieries during 1918 shows a decrease of 204,000 tons on the figures of the previous year, the principal falling off being 92,000 tons in the Railway demand and about 120,000 tons in the export trade. Both these should show great improvement during 1919.

Good progress has been made with the plantations, and the nurseries for young trees have been successful this year. We still have many employees away on service, and you will read with regret in the manager's report that three of them have laid down their lives.

I cannot close without expressing our cordial appreciation of the excellent work done by the consulting engineer, the manager, and all the staff and employees, to whom our thanks are due. I now beg to move that the directors' report, balance sheet and accounts for the year ended 31st August, 1918, laid before the meeting, be received and adopted.

The motion was carried unanimously.

Messrs. H. A. Rogers and C. S. Goldman, the retiring directors, were re-elected, and the auditors, Messrs. C. L. Andersson and Co and F. W. Diamond and English, were reappointed.

will have the equitable effect of increasing the ordinary shareholders' vote in proportion to the new money subscribed. In view of the acceptance of this scheme arrangements have been made with the directors of the various subsidiary companies to relinquish the greater part of their claims for accrued directors' fees against those companies. The proposal for reorganisation of the capital and the raising of additional cash provides that the present issued capital (£185,472 in 741,888 shares of 5s. each) shall be divided into 741,888 ordinary shares of 1s. each and 741,888 deferred shares of 4s. each, that the unissued capital (£114,528 in 458,112 5s. shares) shall be divided into 1s. shares, and that the profits available for dividend shall as to 80 per cent. be divided among the ordinary shareholders and as to 20 per cent. among the deferred shareholders. Of the 2,290,560 unissued 1s. ordinary shares 1,483,776 shares may be subscribed by existing holders at par *pro rata* to their holdings within 21 days of receiving notice—£74,189; 741,888 shares to be under option at par (up to the expiration of one year from the declaration of peace) to the subscribers of the above shares at the rate of one share for every two shares subscribed—£37,094; there would still remain 64,896 ordinary shares in reserve. The subscription of 100,000 of the 1,483,776 ordinary shares is to be guaranteed by Mr. Kennedy for (a) a commission amounting to £2,000; (b) the right if called upon to subscribe under the guarantee to participate *pro rata* to his subscription in the option; and (c) an option to subscribe at par for such of the 2,290,560 ordinary shares as shall not have been taken up, the option to be exercisable within 90 days after the expiration of one year from the declaration of peace.

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Notes and News.

With the present issue the name of this paper is altered to *The S.A. Mining and Engineering Journal*, the title which the paper will bear in future. Readers have already been notified of the change, which is due to our desire to embrace the whole field of engineering in our province. The mining industry in all its phases will continue to receive adequate, and, in fact, increased, attention in our pages in future, and the change in title is made in order to emphasise the larger measure of attention that in future will be devoted to general engineering in all its branches.

* * * *

An important letter from Mr. D. Christopherson on the subject of tropical native labour for the Rand appeared in *The Star* on Thursday. **Tropical Native Labour.** We hope the appeal made to the Government to remove the restrictions on recruiting in the East Coast territories above latitude 22° South will be attended to in view of the urgency of the case. In the interests of the returned soldier and of the low grade mines, Mr. Christopherson shows it to be imperative that a start should be made with the recruiting of 10,000 tropical East Coast natives. We believe that when the present restrictions in travelling are relaxed the Rand will lose a number of East Coast "boys" now desirous of returning home, and if the supply be not augmented in the meanwhile the result will be to make the native labour position worse before it can become better. We hope to return to the subject next week, and trust that Mr. Christopherson's representations will in the interval engage, as a matter of urgency, the serious attention of the Union Parliament.

* * * *

The feature of the latest batch of quarterly reports is the wonderful improvement in the ore reserves of the State Mines. **State Mines Ore Reserves.** At December 31 the figure was 9,445,000 stopping tons going 8 dwts. over a stopping width of 78 inches. This constitutes a record ore reserve for the Rand, that of the New Modder at the end of its last financial year being nine million tons going 8.6 dwts. over 65 inches stopping width.

* * * *

In this issue there appears the first of a series of articles on coal, a product of the Union which is steadily assuming an increasing industrial value. **Coal and Sir William Hoy's Visit to Europe.** Coal and its by-products promise to become of very much greater importance in South Africa within the next few years. In Natal big developments are foreshadowed. The Admiralty have extended very considerable patronage to the Natal coal fields during the war period, and the profits earned have been large. The shortage of rolling stock and its effect on the coal trade is referred to in the article in question, and in this connection it is of interest to learn that the visit of the General Manager of the South African Railways and Harbours to London is largely connected with the immediate and future requirements of trucks and locomotives in South Africa, and with the future status of East Coast trade.

* * * *

Some excellent driving achievements are reported from the Village Deep. On the 25th level of the **Leyner Drills in the Village Deep.** Turf Mines section of that property a developer has been securing an average footage of 6.2 feet per round for the last 12 months, and for 13 consecutive shifts the average was 6.75 feet per round. There are two faces on this drive, an eastern face and a western face, and on each of these faces two Leyner drills are in operation. The drive is 6 feet 6 inches wide, and it is satisfactory to note that on the 21th, 26th, 27th and 28th levels almost equally good progress has been recorded.

These are remarkably high figures for a Central Rand deeper level, and they have been secured by a patient study of all the details which may promote high drilling efficiency and by most careful supervision on the part of the management. Especial care has been paid to the tempering of the drill steels, and a drill sharpener is at work underground in immediate touch with the developers and under the direct orders of the mine captain. Spare machines are maintained in the drives, so that in the event of a breakdown work is only interrupted for an absolute minimum of time. Another point which will readily be appreciated by all machine men is that the developers retain the same machines year in and year out, and are not troubled with the little complexities which employment of a new or unknown machine often causes. Particular attention is paid, too, in lashing out broken ground, and the drives are kept clean in so far as is humanly possible. The above noted results are of considerable interest in these days of universal demand for increased efficiency. They show that a proper appreciation of the smallest details when backed by effective supervision can achieve remarkable improvements even in directions where little scope for betterment is at first sight indicated.

* * * *

Development of this property has been resumed within the past few days. It will be recalled that an overwinding accident occurred during November, and that considerable damage was done to the bottom station and bins. These repairs have now been completed, and normal operations are proceeding again. The lamentable accident whereby two mining men engaged on cementation work lost their lives through an explosion of firedamp last week is being enquired into, and the finding of the Inspector of Mines will be dealt with in our next issue.

* * * *

Among the new companies registered at Pretoria lately is Fraser & Chalmers (S.A.), Ltd., with an authorised capital of £250,000. The company has been formed to take over the South African business of Messrs. Fraser & Chalmers, and it is understood that it will open new branches and generally extend the business of the firm throughout the sub-continent. The Transvaal Marble Quarries is another new venture registered with a capital of £5,000 to develop the marble deposits in the Lydenburg district.

* * * *

Elsewhere in this issue will be found an account of the proceedings at the meeting of the Southern Van Ryn Company. Mr. Leslie's report was dealt with in our last issue. In view of the importance attaching to the development of this new proposition with its large claim area and potential value it is our intention to deal at length with the geological aspects of the concern and its present position, both in regard to development and finance. Articles on the Southern Van Ryn will appear in the near future after a representative of this paper has paid a visit to the area and examined the geological data.

* * * *

The estimate of Customs revenue for the present financial year was £4,308,000. In nine months, however, this amount has already been exceeded. The Exchequer statement for the period April 1 to December 1 shows that the Customs revenue amounted to £4,439,228, as compared with £3,397,392 for the corresponding period of the preceding year. Excise, too, advanced from £791,191 to £903,151; income tax from £1,869,105 to £2,073,315. Other main heads of receipts on the revenue account were: Posts, £876,201; telegraphs, £307,231; telephones, £266,697; diamond mines, £329,723; export duty on diamonds, £231,376; stamp duties and fees, £162,212; estate and succession duty, £166,092; native taxes, £669,382. On the loan account the principal receipts were: Excess profits duty, £112,932; miscellaneous, £403,998. The total Treasury receipts (including £68,171 in transit at the 31st December) were £15,933,416.

A recent *Union Gazette* contained the quarterly statements of the various Banks carrying on business within the Union. The returns bear evidence to the rapid accumulation of material wealth in South Africa. The returns show the position as on September 30 last. On the eve of the outbreak of the war the total fixed and floating deposits in all South African Banks amounted to £33,395,000. After four years of war the total volume of the deposits had reached on September 30 the figure of £61,388,000, an increase of approximately 85 per cent. A comparison of the advances made by the Banks to their customers shows that on the eve of the war the total advances just exceeded 31 millions sterling. On September 30 last they totalled over 43 millions, an increase of nearly 39 per cent. The fact that while deposits have increased by 85 per cent., advances have grown by 39 per cent. only, is an indication of the severe restrictions which war conditions have imposed upon the employment of capital for developmental purposes. In 1914 about 93 per cent. of the total deposits in the Banks was loaned by the Banks in some form or other in the shape of advances to their customers.

* * * *

The general manager of the T.G.M.E. reports as follows for the quarter ended December 31 last:

The Position of the T.G.M.E. Great disorganisation was caused by the influenza epidemic, which broke out on the mines in the middle of October. The tons mined for the quarter were only 17,155, or 27,355 less than the previous quarter, the cause being the wholesale desertion of our native force during the epidemic. Practically no development has been done since October, in which month satisfactory values were obtained in Ponieskrantz North, Brownshill, Columbia Hill Shales and Iota, while good values over very narrow widths were obtained in Theta. There was an average of 251 boys employed in November and 700 in December at Central Mines, while there are now 1,200 boys at the Central, or about half the normal complement. Ore is coming into the Central Mill at the rate of 300 tons per day. Efforts are being made to improve the labour position. Prospecting work practically came to a standstill at the end of October, but a little work has since been done at Kameels on Portuguese horizon, where fairly encouraging values in one or two drives are being obtained. At Ellandsdrift the water has now been got out of the lower workings of the mine, but all development since the epidemic has been suspended; the mine now has about one-third of its labour requirements and eight stamps on an average are being run. A shortage of water for power is likely unless good rains fall soon. The sale of wattle bark and poles has been very limited. At Vaalhoek 175 boys have now returned to work out of a full complement of 300. The drainage culvert has been completed, so this important work is safe; this drive is already draining some water and is being advanced through the dyke in order to cut the main body of water, which it may be expected to do any day. The drive is now in solid country. The battery is being run 16 hours in 24.

* * * *

The war has caused the affairs of the New Lisbon-Berlyn to remain in a quiescent state during the last financial year, but some important statements were made by the company's chairman (Major Lawson) at the recent annual meeting, which merit consideration, particularly from the shareholders. The Chairman said that the reserves already proved in the mine amounted to 103,013 tons of pyritic ore, the average value being 7.56 dwts. gold and 0.347 per cent. copper, the total values in this quantity being estimated at £183,000. As the Chairman remarked, "this is a very important basis upon which to start," particularly as there are known to be large undeveloped reserves. Another reference of the Chairman was to the great demand for sulphuric acid which the New Lisbon-Berlyn property can supply. This is largely used in the manufacture of fertilisers and explosives, various samples tested showing 42 to 43 per cent. No shaft sinking is required, and there is a fair supply of water. The company also has 28,000 acres of freehold land.

TOPICS OF THE WEEK.

GOLD, CREDIT AND UNEMPLOYMENT.

In our last issue appeared the concluding instalment of the extraordinarily interesting series of articles we have been privileged to publish, dealing with the relationship between gold, credit and employment. Of the many articles on the subject of gold and currency that have been printed in this paper during the past two years, none, we venture to say, has dealt so convincingly and so comprehensively with the intricate issues raised, and none has explained with such clearness and conviction the case for maintaining and encouraging the production of gold. Parenthetically, attention may be drawn to the publication in this issue of the full report of the Incheape Committee, on a bare cabled summary of which we in this country have had, up to the present, to vent our disappointment. The acceptance by that Committee of the quantity theory of gold, *i.e.* that prices of commodities are affected by the quantity of gold in circulation, is regarded by the author of the "Rand Mines and Peace Problems" articles as very important, and he draws the conclusion that the expected decrease in the world's gold production will, unless checked, cramp credit, hamper trade expansion, lower wages, augment the ranks of the unemployed, and, as a corollary, jeopardise industrial peace. He goes on to emphasise the point—upon which there is no real difference of opinion—that the first and most urgent business of the allied nations should be to broaden the field of employment and to stimulate enterprise. But if the gold supply is to be curtailed, and if the inflated State note issues are to be reduced, the effect can only be to stultify all efforts towards reconstruction. Hence, it is argued that State note issues should only be reduced gradually, with the utmost caution, and—what is more important to us—gold production, as an essential after-war measure, should be—*pace* Lords Cunliffe, Incheape and the rest—subsidised. It is possible that, living so close to the industry, we are prejudiced in favour of these views, and regard them as expressed with reason and moderation. The extraordinary thing is that others who agree regarding the premises, *i.e.* who recognise that the Empire's commerce and industry must be fostered by ample credit accommodation after the war should differ radically, and to our mind contradict themselves in their recommendations for meeting the difficulty. The latest and most glaring example of this is to be found in the report of the Committee on the provision of financial facilities for trade after the war, appointed jointly by the Chancellor of the Exchequer and the Minister of Reconstruction in November, 1917, under the chairmanship of Sir Richard Vassar-Smith, of Lloyd's Bank. They introduce their report (now published by the Ministry of Reconstruction) by expressing the emphatic opinion that the primary factor in repairing the wastage of capital caused by the war lies mainly in increased production and actual saving. Discussing the financial requirements of industry after the war, the Committee foresee: "A considerably more than normal demand for working capital owing to the higher cost of labour and materials, the necessity for giving longer credit, and the anticipated expansion in the volume of trade due to the fact that the basis for potential commercial output, as compared with pre-war output, has been very greatly enlarged during the war by the extension of existing works and the building of a very large number of absolutely new ones." Before discussing means of providing credit facilities after the war, the Committee give a short explanation of the British credit system as existing before the war, and then proceed to show how the position is entirely changed to-day. We quote the words of the report explaining the altered currency situation: "As there is no free international market in gold, the operation of the foreign exchanges has been interrupted, while at the same time the internal gold circulation has been replaced by a currency note issue. As there is no legal limit to the

amount of currency notes which may be issued, there is therefore no automatic check upon the expansion of credit. The very large extent to which expansion has taken place is shown by the fact that whereas the total deposits at the banks of the United Kingdom, exclusive of the Bank of England, amounted at the end of 1913 to £1,070,000,000, the amount of deposits is now nearly £2,000,000,000. The enormously increasing purchasing power thus created has, in the Committee's opinion, been one of the main factors contributing to the general rise in prices." In regard to the position after the war, the Committee express the opinion that "it is essential for the reconstitution of industry and commerce to impose restrictions as soon as possible upon the creation of additional credit by the restoration of an effective gold standard. To attempt to rebuild industry by the further indiscriminate expansion of credit would endanger our position as the financial centre of the world, and would inevitably lead before long to grave disaster." The end of this report, it seems to us, is a clear contradiction of the beginning. It will be seen that with the author of our articles, it opens by declaring the necessity for an expansion of credit to stimulate and broaden the field of enterprise and employment. But it winds up by flatly stating that credit must be restricted and that its further expansion would inevitably lead to disaster. Either way, apparently, disaster lies. Like the Incheape Committee's report, the finding of the latest Committee appointed by the Imperial Treasury correctly diagnoses the case, and likewise fails lamentably to indicate a cure.

The number of natives employed in November on Rhodesian mines shows a decrease of 11,378 as compared with the corresponding month in 1917. The decrease is largely the result of the influenza epidemic. In reply to representations made by the Rhodesian Chamber of Mines that at least one month's remission of labour fees should be allowed to mine owners in respect of those native employees who fled from the mines through fear of the epidemic, but whose names were still retained on the registers owing to the fact that the fugitives had not been signed off, the Secretary for Mines and Roads had intimated that the Government was prepared to consider individual cases on their merits.

In its current issue *The Secretary*, obviously referring to the Springs Mines distribution, says:—A case has recently been brought to our notice where the Inland Revenue authorities have agreed to accept payment of income tax in shares. It was the case of a well-known mining company which is paying a dividend in shares of one of its subsidiary companies, and the dividend warrant is in an unusual form, inasmuch as it states that the authorities have consented to receive income tax in shares, and the number of shares corresponding to the amount of tax is deducted from the amount of the dividend. Although it is unusual, it is not a new practice for the authorities to receive tax in shares, but we venture to think that it is not a practice which should be encouraged. It is not desirable from any point of view that a large State Department should become a shareholder in miscellaneous mining and other enterprises—from the point of view of the State because the Revenue may lose tax altogether should the shares prove unsaleable, and from the point of view of the shareholder because, as we believe is the case in the present instance, the shares may be actually marketable at a premium, and the shareholder has therefore had deducted from his dividend a larger sum than he is bound to pay. An interesting point arises as to what will happen in the case of shareholders who are entitled to claim exemption from tax and are clearly entitled to get a refund of the amount of tax deducted. Will the Commissioners give such a shareholder a re-transfer of his shares, or will they treat the shares as being worth par, and pay the shareholder his refund in cash? If the latter, the Revenue may further lose on the transaction, as it may never realise the par value of the shares.

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SOUTH AFRICA AND KING COAL.—I.

Immense Resources of the Union—Markets Awaiting Exploitation—An Unappreciated Asset—Our New Atlantic Seaboard.

THE title of this article is justified by the fact that coal is undoubtedly king of the industrial world. The earth could scrape along without any other single mineral product. A process of substitution in the metals of industry would mean vast inconveniences and it would impose a financial burden on industry which would temporarily paralyse many branches of trade and commerce. Still the world would manage to scrape along. But if the Martians conquered this planet and by way of forcing an indemnity put armies of occupation on all our coalfields and prevented the raising of coal, the world would have to pay the indemnity or else rush headlong into extinction. The forests of the world would not save the situation. The oilfields of the world would not save the situation. For coal is the crowned king of all human activity. Coal is king in South Africa. But the winning of coal is not accounted of much importance by comparison with other industries. For every sovereign's worth of coal which we raise in South Africa we produce ten sovereigns' worth of gold and over two sovereigns' worth of diamonds. The world could "carry on" without any serious disruption if all the diamonds in and on the earth became suddenly metamorphosed into lamp black. It is conceivable, too, that if silver or platinum became the medium of currency and gold melted away into vapour we should still maintain existence and activity. But without coal the world would speedily rush into a state of universal bankruptcy and within a century we should have fallen back into the dawn of time when man was of no more account than a pterodactyl.

THREE HUNDRED YEARS OF COAL RESERVE.

The importance of coal is not and never has been properly appreciated in this country. The glamour of gold and the gleam of diamonds have made us lose our sense of perspective when we look upon black and sombre coal. Yet coal is the most essential commodity of the world. There are few countries possessing such extensive coal resources as South Africa, and what is equally important, South Africa raises coal at a cheaper rate of production than any other important coal-producing country.

Sir Robert Kotzé, in his address before the local Institute of Engineers in August, 1911, took the area of the South African coal fields at five thousand square miles, with an average thickness of six feet, and allowing 55 per cent. for extractable saleable coal, he fixed the total at twenty thousand million tons. But this is undoubtedly a most conservative estimate. A writer in *The New South Africa* estimated the total at about sixty thousand million tons, and Dr. P. A. Wagner, in his presidential address read before the S.A. Association for the Advancement of Science, referred to conservative estimates which fixed the total "at 56,200,000,000 tons, of which 36,000,000 tons fall to the share of the Transvaal." What proportion of these last-named tonnages is to be regarded as extractable and saleable coal is not clear, but if we adopt a figure of somewhere around 30 thousand million tons of coal which are capable of profitable extraction and have a ready selling value, the figure is not open to much criticism on the ground of over-estimation. Last year the collieries of South Africa raised and sold just under ten million tons of coal. If we apply this rate of exhaustion to the estimate given above (*i.e.*, thirty thousand million tons) it will be obvious that we have enough coal to last us for three hundred years at the present rate of consumption. In point of fact, we can produce coal at twice the present rate and still at the end of 300 years have tremendous coal resources because there are very large areas which are known to contain coal measures, but which have never been exploited and which are not referred to in the foregoing calculations. The truth is we have more coal than we know what to do with. There is so much coal within range of the pits and tunnels of the existing collieries that there is little inducement under existing conditions for capital to go a-seeking new coal mines.

THE ROLLING STOCK QUESTION.

But there ought to be inducement. Existing conditions require a change. We are in an admirable geographical position to compete with other markets. The price of South African coal at pit head is lower than in any other country in the world with the exception of India. In December last Transvaal coal had a value at pit's mouth of just over five shillings per ton. Contrast this figure with 9s. 0 $\frac{3}{4}$ d. for the United Kingdom, 10s. 6 $\frac{1}{4}$ d. for Germany, 12s. 8 $\frac{1}{2}$ d. for France, and 13s. 5 $\frac{1}{2}$ d. for Belgium in 1912, and bear in mind that coal in Europe to-day is very much more expensive than it was in 1912. There is no adequate reason why South Africa should not be one of the premier coal producing countries of the world. Our resources are sufficiently great to allay any fears of early exhaustion. Exhaustion of coal measures is not a point which need trouble the present Government at any rate. But the fact that so far the coal producers have been given remarkably little encouragement in the building up of an export trade commensurate with the country's coal producing potentialities certainly is a matter which calls for the Government's most serious consideration. It is admitted that the war has exercised an important bearing on this matter. The demand for coal has increased but shortage of rolling stock and the difficulties in the way of securing new trucks and locomotives have greatly hampered exports. This cry of rolling stock shortage is, however, no new one. It was heard long before the war. It is heard to-day; but if, a few months after the advent of peace and the regaining of normal conditions, the coal industry is still penalised through lack of transport facilities, it will behove the collective coal interests to endeavour to make the Government realise the value of this vast asset. It is true that our coal export trade has broadened considerably during the war. But this increase has been practically negligible when considered in relation to the coal resources of the country and to the ability of the collieries to greatly augment their outputs of good coal at a remarkably low price. As Mr. Trevor (Inspector of Mines) remarked a few weeks ago, now is the opportune moment for South Africa to gain increased trade. The new world is emerging from the ashes of the old unstable hemispheres of pre-war days. Tremendous industrial projects are afoot; tremendous quantities of material and particularly of fuel will be required to give impetus to these new projects.

EXPORT VIA WEST AND EAST COASTS.

South Africa has emerged from this war with at least a mandatory dominion over South-West Africa—one can read no other interpretation into that particular portion of the Peace proposals which is concerned with the fate of the German Colonies. And so we gain several hundreds of miles of the Atlantic seaboard with at least two fair ports in Luderitzbucht and Swakopmund, and a railway system which links up the coal fields and the southern Atlantic. On the East Coast we have not possession of the natural gateway of the Transvaal which is so favourably situated to the most important coalfields in South Africa, but we have in Durban one of the main ports of the Indian Ocean. Possibly our position on the East Coast may be improved in the comparatively near future. But even if it is not South Africa with its two seaboard and its immense coal resources favourably situated in regard to ports and railways, and capable of giving buyers the best coal value for their money in the world, should be able to control the coal trade of the Southern Hemisphere. We have immense markets in South America, India, the Straits Settlements and the Pacific, which so far have scarcely been touched. There is no earthly reason why our coal trade and particularly our export coal trade should not be quadrupled within the next few years.

(To be continued.)

THE MINERAL WEALTH OF THE CONGO.

Great Expansion of Production Promised—Katanga's Output Capacity to be Quadrupled—New Machinery Despatched to the Kilo Gold Fields—The Opening Up of Middle Africa—Belgium and the Anglo-Saxons.

FROM conversations which we have had with business and mining men who have recently visited the Belgian Congo we gather that very big industrial developments are impending in that State. This journal has always held to the view that the Congo will, in the not far distant future, prove itself to be one of the richest territories on earth, and despite the crippling influences of the war the great Belgian Colony has made considerable advance towards fulfilment of this prophecy. Indeed, whilst the Mother Country has been broken and devastated by the Hun hordes the Colonial State has been making steady advances in trade and industry and prosperity. It may well be that the Congo will rehabilitate Belgium and in time restore that stricken little kingdom to its pre-war position, when it was one of the most prosperous countries in the world.

CONGRATULATIONS TO MR. WILLIAMS.

The main impetus towards general activity and trade development in the Congo has come from the Katanga cupriferous belt. After all these years of patient toil, immense transport and financial difficulties, metallurgical problems and adverse criticism, Mr. Robert Williams' "Copper Rand" has at last come into its own. Whatever views may have been expressed by correspondents in this paper in the past the *South African Mining Journal* wishes to convey to Mr. Williams and his colleagues its sincere congratulations on the success which has crowned their efforts, not only because the Katanga belt has become a copper producer of first-rate importance, but even more so on the fact which only recently has been divulged that but for the unceasing endeavours of Mr. Williams the whole of this rich region might have fallen under German domination. As it is, to-day the Katanga mineral belt (a term which may be used collectively to denote the interests of both the Union Minière and the Tanganyika Concessions) is under Belgian and British control, and for the first time in its twenty years of history the Tanganyika Concessions has just recently disclosed a credit balance in its annual accounts, the 1917 operations, which were ably reviewed by Mr. Williams in London a few weeks ago, having resulted in a credit balance of £188,270. Tanganyika has turned the corner and even the financial and metallurgical pessimists of a decade ago can now scarcely doubt that, with the war over and Belgium and her Colony freed from the menace of covetous Germany, the affairs of this company will show steady improvement.

ACTIVITY IN THE PAST FOUR YEARS.

The work achieved in the Katanga mineral region since the outbreak of war has been most remarkable. We have just had the pleasure of interviewing one or two Rhodesian engineers who have recently been visiting Elisabethville, the Star of the Congo, Kambove, and other properties, and they report an astonishing scene of activity and development. The equipments and smelters already installed in the southern heart of Africa are stated to be at least comparable with the latest plants of other large copper producers in America and elsewhere. Immense quantities of profitable ore are awaiting treatment, lines of rail and water communication with the south and north and east and west have been opened up with wonderful rapidity, and now that the world can pause after four years of war and can return to a consideration of peaceful projects, the linking up of Katanga with its natural port on the west coast at Lobito Bay cannot much longer be delayed.

The most recent developments have emphasized the very great advantages which completion of the Benguela line would secure. Not only would this railway greatly enhance the profit on copper, but it would facilitate to a marked degree the extension of the Katanga productive plants and would also accelerate the exploitation of the Ruwe gold field and the Busanga tin deposits.

160,000 TONS PER ANNUM.

Despite the war the smelting plant of the Union Minière has been increased from a producing capacity of 12,000 tons per annum to 40,000 tons per annum in the last four years. Plans are now under consideration for quadrupling this latter figure. In other words, the Katanga fields will before long have a productive capacity of 160,000 tons of copper per annum. So much for the Katanga region.

THE KILO FIELDS.

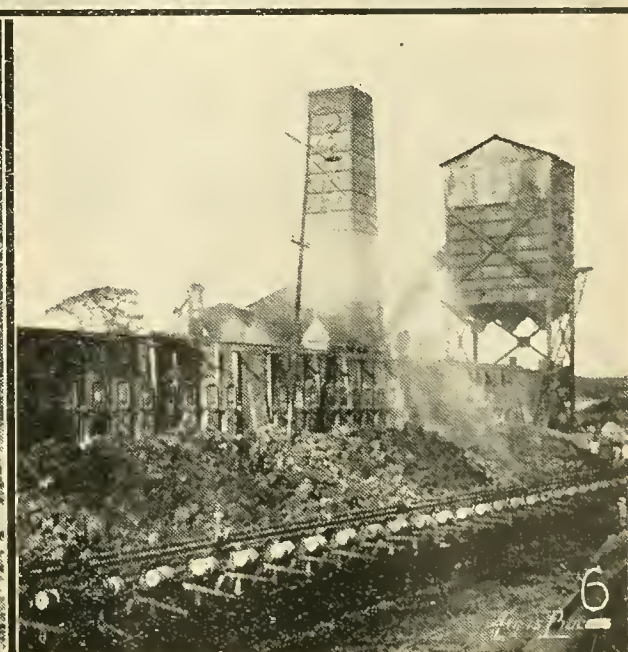
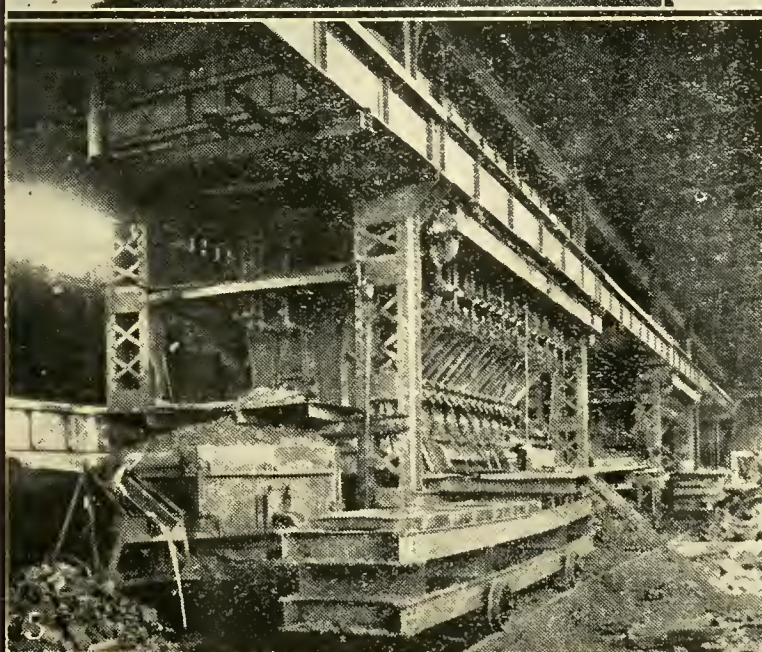
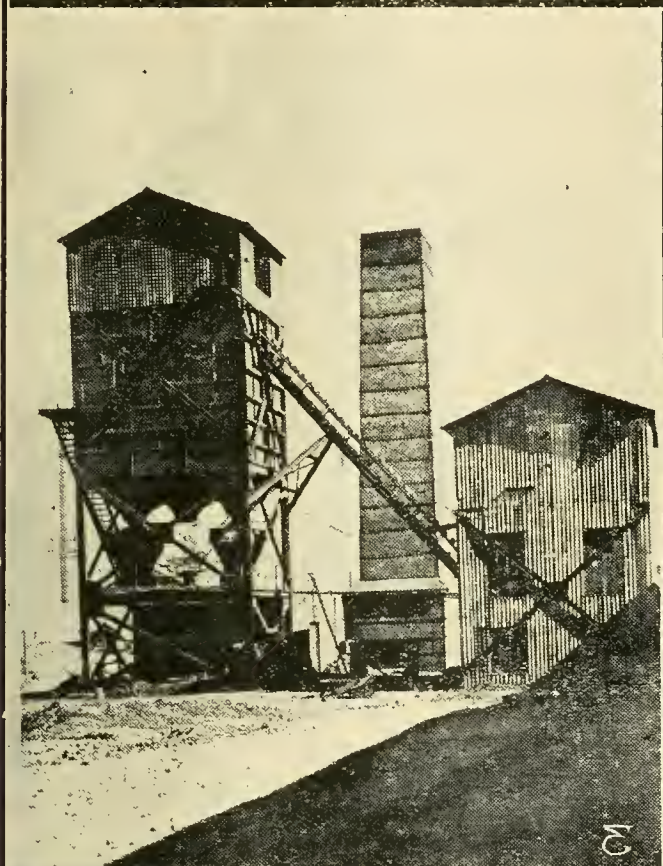
Very much further north to the west of Albert Edward Nyanza, the Kilo gold field has been quietly producing gold for the last dozen years. Travellers and geologists of repute who have visited the Kilo region have spoken of the richness and potential wealth of this remote field. But transport difficulties and a Government control unsympathetic to British prospectors and capital tended to curtail expansion. In the pre-war days the Government of the Belgian Congo was not particularly keen on an influx of Anglo-Saxons into that territory. This is scarcely to be wondered at. The Congo has attracted undesirable adventurers from all parts of the world, and the performances of a few notorious Britishers and Americans in that State did not tend to make Congo officials feel very sympathetic towards any action which would encourage more visitors and particularly the ubiquitous British adventurer. Let us hope, however, that wiser and more considerate councils will prevail. Kilo has been under the watchful eye of mining men and financiers for some years past. The extension of railway and water routes in middle Africa will bring even the remotest corners of the Nyanzan regions within the scheme of world industry during the next few years, and it is our firm belief that before long the Kilo gold fields will be very much more important and better known than they are at present. Already we learn of the despatch of considerable quantities of plant to Kilo by a well-known Rhodesian firm, and we shall not be surprised if the mineral production of the Congo Belge is augmented by a substantially larger output of gold from the Kilo region simultaneously with the completion of the Benguela Railway and the expansion of the Katanga smelting and leaching plants.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

- "Crown."—The new shaft being sunk is in blue ground and prospects seem favourable. A test washing has not been made.
- "Malagash."—The human factor at the property has given trouble and affairs are being reorganised.
- "Underground."—A pure speculation.
- "Shareholder."—See the figures given in the quarterly report in this issue. They confirm your anticipation.
- "Cautious" (Salisbury).—We are writing to you.
- "J. L." (Benoni).—There is no short answer to your three questions. The shares are based on sliding scale, different in each case, and varying with the proportion of profits to yield.

THE KATANGA COPPER RAND.



1. Workmen's Cottages.
2. Compound.
3. Coal Crushing Plant for Making Coke

4. Kambove Mine.
5. Interior of Furnace Building.
6. Copper Coke Ovens

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FULL REPORT OF THE INCHCAPE COMMITTEE.

Negative Findings—Rand Working Costs and War Charges—Arguments in Detail.

On 27th September last it will be remembered that a Committee was appointed by the Treasury, consisting of Lord Inchcape (Chairman), Sir Thomas Elliott, Sir Charles Addis and Mr. W. H. N. Goschen, "to consider and report upon the effect of the war upon the gold production of the British Empire with reference more particularly to the treatment of low-grade ores, and how far it may be of importance to the national interests to secure the continuance of the treatment of such ores, and generally how to stimulate the production of gold." The report of this Committee, dated 29th November, is now issued as a White Paper. With two appendices it runs to twelve folio pages of small print, and includes several elaborate tables. A more or less adequate cabled summary has already appeared in the daily papers, but, in view of the enormous importance of the issues raised, we put on record the following more complete report:—

RECENT SET-BACK IN GOLD PRODUCTION.

The Committee's report commences with a brief history of the question and a reference to the conclusions of the Select Committee of the South African House of Assembly which early this year considered the position of the Union gold mining industry. It goes on to say: "We have examined statistics of the gold production of the Empire and of the Transvaal for a number of years, and have heard evidence from the Gold Producers' Committee, who state that they speak for the producers of the Empire, Mr. Agnew, on the nomination of the Agent-General for Western Australia, the London Chamber of Commerce, the South African Trade Association, Lord Cunliffe, Sir Brian Cokayne, the Governor of the Bank of England, Sir Thomas Rose, of the Mint, and Sir John Bradbury." An elaborate table shows, so far as figures are available, the tons milled, the output in fine ozs., the value at £4'277 per oz. fine, the yield per ton, the working cost per ton and the average labour, white and coloured, employed for each year from 1910-1917 inclusive, and an estimate for 1918 for the Transvaal, West Africa, Rhodesia, Australasia, Canada and India. The Committee comments: "It will be seen that the total production of the Empire has on the whole risen steadily from 1910 until 1917. In 1910 it was £51,126,737. In 1913 it was £56,965,184. In 1915, £58,679,931. In 1916, £59,561,114. In 1917 it fell to £56,131,699, a drop of £3,429,415, and in 1918 it is anticipated that there will be a further fall of £4,652,207, bringing the total to £51,479,492. The close correspondence between the amount of labour employed and the gold produced is a marked feature of the figures. Throughout the whole period, however, there has been a continuous decline (with the exception of a trifling increase in 1916 over 1915) in the production of Australasia. We may here sum up the figures. They show an Empire production for 1918 (estimate) of £51,479,492, against £56,131,699 for 1917, and £56,965,184 for 1913. A total Transvaal production of £36,479,218 (estimate) for 1918, against £38,306,381 for 1917 and £37,372,949 for 1913: a low grade mine production for 18 mines in the Transvaal of £7,949,007 (estimate) for 1918, against £8,590,270 for 1917 and £10,639,846 for 1913. There is accordingly an all-round slight reduction in output in 1918 as compared with 1913, but there has been, on the other hand, an increase in production in each year of the war up to 1918 over the pre-war figures, and if a comparison is made between Empire production of the last complete four years before the war and the four complete years of war (reckoning 1918 as complete) it shows an increase in production in favour of the latter period of £5,623,162. The increase is due to the increase in the Transvaal as a whole, which is responsible for some 60 per cent. of the total produced and which more than counteracted the steady decline in the output of Australasia and of the low grade mines in the Transvaal. We have endeavoured to ascertain whether and to what extent the check to the upward tendency in the Empire production of gold resulting from the decline in the previously increasing production of the Transvaal is the effect of the war. The South African Committee ascribed the position in which the low grade mines found themselves to three causes: (a) The rise in wages due to the war; (b) to extra costs of stores; (c) to shortage of explosives and of native labour which rendered it difficult for them to make revenue cover working costs. Between the appointment of the Committee in South Africa and our appointment no low grade mine in the Transvaal did in fact close down, and our witnesses were unable to say that the two mines which had closed down before 1918 had been compelled to do so by increased costs. . . . In answer to the specific questions as to what extent the falling off in production was due to the increase in cost, the witnesses stated that it would be very difficult to separate the figures, and that a very technical examination, which could not be made in London, would be required. Our witnesses, however, thought it safe to say that the main cause of the decline in production, so far as the Rand were concerned, was increased cost. They admitted the great importance of the question for the purpose of our inquiry, and when further pressed, stated that the relation between the various causes of the decline could not be given. It is, however, obvious, as was pointed out by Sir Newton Moore, that a mine on the border of payability becomes definitely unpayable on an increase of costs, and we were given as an instance of closing down of the Great Fingall mine, one of the two cases, both in Australia, in which it has been definitely

stated that a mine has in fact had to close down since the war owing to increased cost. The witness was not, however, able to state how long the mine might have been carried on but for the rise in costs.

SHORTAGE OF EXPLOSIVES AND LABOUR.

"We attribute the decline of £1,100,000 in the Transvaal as a whole between 1916-1917 mainly to shortage of explosives caused by the war. We have been informed by the Gold Producers Committee that the supply of explosives is now ample. In 1918 the decline in labour—due, we are told, to the reopening of the diamond mines—which set in in 1917, made itself felt, and the fall in production between 1917-1918 appears to be due mainly to that cause. We are not satisfied that so far as the Transvaal as a whole is concerned the increase in cost of working affected the output in either year. The decline in the production of the low grade mines during the war appears to us to be due to the normal falling off in the value of the material treated. With regard to Australasia, Mr. Agnew has told us that 'in addition to the gradual falling off of the value of the ore, the labour shortage has throughout the whole period of decline in production been largely responsible for it, and that during the war especially there is no doubt that the shortage of labour and the inefficiency of the remaining supply was an overwhelming factor in the difficulty.' . . . As to the future, it has been represented to us that having regard to the increase in cost, unless assistance is given, low grade mines producing in normal times payable ore will be obliged to shut down and higher grade mines will in their operations leave behind low grade ore which in normal times would have been worked, thus shortening their lives for some period which cannot be determined. But the argument is, in our view, directed rather to the interests of the mines than to the question of gold supply, unless it can be shown that we are within measurable distance of the exhaustion of gold, and it appears to us that anything in the nature of a subsidy per oz. produced, as has been suggested by the Gold Producers' Committee, would be an inducement to a mine to work the better ore, though Sir L. Phillips thought that steps could be taken to prevent this result.

"The following details of the increased cost attributable to the war have been supplied to us by the Gold Producers' Committee:—

	1915.	1916.	1917.
1. Increased cost of mine supplies	£1,500,000	£1,750,000	£3,250,000
2. Increased gold realisation charges, including insurance and freight	400,000	400,000	400,000
3. War bonuses and increases in wages to employees	40,000	280,000	600,000
4. Allowances to employees on active service	100,000	300,000	350,000
5. War Levy in South Africa	500,000	500,000	500,000
	£2,540,000	£3,200,000	£5,100,000

These figures represent an increase

of cost per ton milled of . . . 1s. 9d. 2s. 2d. 3s. 8d.

Peace may be expected to bring about the immediate disappearance of such part of the increase in item (1) as is due to the increase in cost of freight and insurance, but how soon prices will return to normal we do not venture to predict. One of the witnesses, in South Africa gave nine months as the period likely to elapse before they would do so. We have examined in detail item (2). The increase of 8'38d. [per fine ounce of gold] in the cost of insurance and freight, amounting for £350,000 according to our witnesses, may be expected to disappear when peace is signed. It is believed that to a large extent it has already done so, the cost of freight and insurance being now very little over pre-war level. . . . With regard to item (3), while an immediate decrease in wages cannot probably be expected, war bonuses should in time disappear. Items (4) and (5), involving in 1917 £850,000, will presumably also disappear at peace.

"There remains the question of the supply of labour in South Africa, with regard to which certain suggestions have been made both to ourselves and to the Committee in South Africa. The question is, in our view, entirely a matter for the Union in South Africa. There is, however, some evidence as to the effect of the return of peace on the question. Mr. (Sir Evelyn) Wallers stated before the Committee in South Africa that 'the demand for native labour in other industries has steadily increased and is likely to continue to increase, having regard to the restrictions on the importation of material necessitating further labour for local manufacture, the renewal of operations in the diamond mines, the increasing operations of the collieries, the opening up of new gold mining areas on the Far East Rand, and the insistent demand for native labour of the farmers.' In Mr. (Sir Evelyn) Wallers' view, possibly the return of the native labour contingent from the war may bring about an amelioration.

ANALYSIS OF ALLEVIATING SUGGESTIONS.

"We have now to examine the suggestions for meeting the situation which have been made both to the Committee in South Africa and ourselves. All of them contemplated assistance in money, in different forms and for different purposes, and two of them at any rate are directed to remove an alleged cause in the decline of gold production, which we are unable to regard as the primary cause. These sugges-

tions cannot in our view be entertained, but we are satisfied that they were made only after the fullest consideration, and therefore deserve careful examination at our hands. Two suggestions were made to the Committee in South Africa. The Chamber of Mines proposed the closing down by agreement of six selected low grade mines, the distribution amongst the rest of the labour and materials released, and a subsidy to be provided by the Government to the mines selected for shutting down, to enable them to maintain pumping and other necessary work to provide for eventual reopening. The amount of subsidy required was given at not more than £150,000. The Consolidated Gold Fields of South Africa suggested a State subsidy per ton of ore milled to enable such of the poorer mines as had a probable life of five years or more to cover any deficit in the cost of working. They proposed, further, the formation, if necessary, of a Government Committee to control output, development and the allocation of native labour and explosives. The amount of the subsidy required for some fourteen low grade mines was given as £183,000. The Committee was unable to recommend the granting of subsidies as suggested by either the Chamber of Mines or the Consolidated Gold Fields. Its report on these suggestions is as follows: 'Your Committee is unable to recommend the granting of subsidies as suggested by the Transvaal Chamber of Mines and the Consolidated Gold Fields of South Africa, Ltd. It is unable to see any justification for a grant from public funds and is of opinion that subsidies would constitute a bad precedent and that it would be very difficult to keep them within reasonable limits. The Government would have to satisfy itself that its subsidy was economically used and not wasted in careless working or unnecessary costs, and no supervision could adequately ensure this, short of complete control by the State. It would be most difficult to justify the payment of such a subsidy to some mines and not to others which might be considered to be equally deserving of assistance by the companies owning them, or by the communities interested in their being kept open, and the Government would be faced with a demand to which no limit can be foreseen, not only from mining on the Rand, but also from other industries and communities.' We entirely agree. The Committee, however, as we have stated above, recommended that steps should be taken to control (a) the amount of development work that may be carried on by each mine; (b) the allocation of stores and especially explosives; (c) the allocation of the available labour force.

A SUBSIDY "FUNDAMENTALLY UNSOUND."

"It has been represented to us that the expedients proposed to the South African Committee are quite insufficient, and the Gold Producers' Committee have stated as their opinion that 'if it is desired to maintain the existing production of gold, as far as the Witwatersrand gold-field is concerned, about 12s. 6d. per standard ounce of raw gold would counteract the present increased cost of production, and would tend to check a further decline in the output, but it is by no means certain that it would restore the pre-war output.' The witnesses calculated that a subsidy of 12s. 6d. per standard ounce of raw gold throughout the Empire would cost £7,000,000. We were at some pains to discover what we should get in return. Our witnesses, however, admitted that it would be an experiment merely. They could say no more than that 'the extent to which the subsidy would affect the gold output would depend enormously upon the labour supply and a few other conditions,' and that, while a Government subsidy would not necessarily produce more gold, 'given a subsidy the Witwatersrand would make every effort to, and would hope to continue to, produce gold at the rate of £7,000,000 a year which would not otherwise be produced.' Our witnesses admitted that from the point of view of the purchaser the grant of a subsidy in addition to the price would amount to an increase in price. They agreed without hesitation to the importance of maintaining the standard price of gold. But the conclusion is irresistible that gold cannot be purchased at 23s. 9d. per sovereign concurrently with the preservation of the gold basis which assumes the maintenance of the existing fine content of the sovereign, as to the importance of which there can, we think, be no difference of opinion. A subsidy for the production of gold appears to us to be fundamentally unsound. Gold has been adopted as the standard of value because, by reason of the operation of natural causes, it is available in such quantities and at such a cost of production in terms of other commodities as to give it a more or less stable value. Its value in terms of commodities is directly influenced by the laws of supply and demand. Periods of increased gold production, following on the discovery of further deposits of gold capable of extraction at a low cost, have been marked by an increase in the price of commodities. The exhaustion of these sources of supply has been accompanied by a decline in the price of commodities. . . . It is undoubtedly desirable that considerable gold reserves should be held in this country, but in our view the most important function of a gold reserve is that gold from the reserve should be available for export at the standard price when required to meet foreign indebtedness. We think it essential to preserve a free market in gold, but clearly it would not be a business proposition to do so if we had to pay £4 10s. 3d. for an ounce of gold in order to export it at £3 17s. 10½d. We can only maintain our gold reserves in this country if the value of our exports, visible and invisible, exceed on the balance the value of our imports. If we want gold and cannot produce it at a profit, we must depend on our capacity to render services and to produce at a profit the commodities wanted elsewhere by the holders of gold, and to do so we must adjust our prices to world prices. We shall not be able to keep gold which we acquire by means of a subsidy if the balance of trade is against us, and apart from the shareholders in gold mining concerns whose gain would be merely temporary, the only people who would benefit by the subsidy would be the foreign purchaser of the gold. The London Chamber of Commerce apprehend that prices may fall rapidly at peace, with disastrous results to industry, and contend that it might be in the public interest to take steps to prevent the rapid fall in the price of commodities by stimulating the production of gold at the expense of the taxpayer. We neither share

their apprehension nor accept their contention. To give more for an ounce of gold than it is worth in currency appears to us out of the question, except on the supposition that we want gold for the purpose of keeping it locked up and unavailable for export. We cannot, however, see any use in acquiring gold for such a purpose. We have no reason to believe that there will not be forthcoming from the British Empire on a parity basis as much gold as we shall need for the purpose of strengthening our reserves, but in any case the additional amount of gold which at best we could hope to secure by a subsidy would, in the opinion of our witnesses, be of no advantage to this country for building up reserves unless we can afford to keep it.

GOLD PRODUCERS' GRIEVANCE NOT "WELL FOUNDED."

"There is one other matter on which we think it right to make some observations. There appears to exist a widespread impression that in some way the gold mine owner has suffered unfair treatment, that in the words of one of our witnesses, he has been 'damified' by the action of the Government. It is apparently widely thought that he has been compelled to deliver the whole of his products to the Government and that he has suffered by the issue of currency notes. It seems to us that had not the Bank of England been willing to take his products he would have been unable to market them at all during the war, or at most only to a very limited extent, and we have ascertained that, so far from it being the case that any pressure was exercised upon him by the Government, he accepted readily an arrangement under which the Bank of England agreed to take the whole of his products. Further, the Bank took delivery of the products in South Africa at the standard price, less an agreed charge for freight, insurance and refining and other charges ordinarily borne by him, the agreed charges of 25s. per cent. being much less than the charges he would otherwise have had to pay. The insurance alone would in 1917-18 have amounted to five guineas per cent. On deposit of the gold in South Africa he obtained an advance in London of 98½ per cent. of the value, thus gaining at least three weeks' interest. It is calculated that he saved by the arrangement some 3s. 4d. per ounce—a real benefit to him, not in the least affected by the fact that the Bank were able to secure it for him, in view of the special arrangements which they were in a position to make, without themselves incurring any additional expenditure in procuring the gold. Lastly, it was open to him at any time to cancel the arrangement. The gold producers have argued that the unavoidable expansion of currency by the issue of currency notes has raised prices against them unduly as against the producers of other commodities, who have been able to obtain higher prices for their products, but it is to be remembered that the gold producers have always had the advantage of the standard price of their product during the periods when the price of other commodities has fallen. We cannot, therefore, agree that the sense of grievance is well founded in fact.

COMMITTEE'S CONCLUSIONS.

"We summarise below the result of our inquiry. We find:—

"(1) That, taking the period of the war on a whole, the production of gold in the Empire exceeded the production during the corresponding period immediately preceding it.

"(2) (a) A decline appears for the first time during the war in 1917. In 1917, as compared with 1916, there was a reduction in the value of gold produced in the Empire of £3,429,415, made up as follows, the figure for Australasia being an official estimate:—

Transvaal	£1,183,141
Rhodesia and West Africa	484,677
Australasia	906,600
Canada	777,914
India	77,083
Total	£3,429,415

"(b) In 1918 a further fall of £4,652,207, as compared with the 1917 production, is anticipated, made up as follows, the figures for Australasia and Canada being estimates not based on any ascertained figures, none being available in London:

Transvaal	£1,827,163
Rhodesia and West Africa	754,299
Australasia	1,401,400
Canada	674,588
India	14,759
Total	£4,652,207

"(c) That the decline in the Transvaal in 1917 was due to a combination of shortage of explosives and shortage of labour, of which the shortage of explosives due to the war was the more important, and in 1918 mainly to the shortage of labour, not due to any large extent to the war.

"(d) That the decline in Australasia in 1917 and 1918 was normal and due in the main to natural causes, but that it was accelerated by the increase of costs and decrease in efficiency of labour caused by the war.

"(3) That up to the date of our appointment the treatment of low grade ore in the Transvaal has not to any extent which can be determined been reduced by the war.

"(4) That from the point of view solely of gold production the abandonment of the treatment of low grade ore in favour of higher grade ore will not within any measurable period reduce the total output of the Empire and that the continuance of the working of low grade mines which are unable to work at a profit to themselves is not therefore a matter of any great importance to national interests.

"(5) We are not prepared to recommend any bounty or subsidy for the purpose of stimulating the gold output of the Empire; gold being the standard of value no more can properly be paid for it than its value in currency."

MINING AND OTHER INDUSTRIES IN THE "OUTSIDE" DISTRICTS.

Points from the Annual Reports of the District Resident Magistrates—Coal Mining Activity.

From the annual reports published this week, in Blue Book form, of the Magistrates of the different districts of the Union for 1917, we cull the following relating to mining and other industries:—

Coal mining was carried on extensively in the Ermelo district, there being seven mines working, and the coal produced was of the best quality. The output amounted to 680,479 tons. The Breyten Collieries yielded 397,767 tons and the Spitskop, 126,300 tons. Iron ore, containing 65 to 68 per cent. of iron, was discovered in large quantities on the farm "Roodepoort," about seven miles from Ermelo, and although mining operations only commenced on the 14th December, yet in the 14 days to the end of the year the output reached 2,000 tons. Oil shale in payable quantities was also reported from "Sheepmore," about 20 miles from Ermelo.

There was every indication of a number of industries being about to be started in Germiston, such as the manufacture of nuts and bolts, the producing of pure chemicals, electro-furnace products and concrete pipes. The salt works at De-la-Reysville in Lichtenburg had an output of 20,448 bags, nearly three times as much as during the previous year. The Asbestos Mine in Lydenburg was still being worked with gratifying results, but the company was rather handicapped during the year, owing to the difficulty of obtaining transport to carry the asbestos to the railway. The Chromite Mines were also drawing some attention, but a light railway was necessary for their development. The lime works were turning out good material which found a ready market, and it was reported that arrangements were in progress for the manufacture of carbide at Pilgrim's Rest. The gold output of the district was £563,233, and base metals £36,372. The output of the Portland Cement Company at Slurry reached 25,000 tons, valued at £65,750, and a kiln, power plant and grinding machinery were being erected from which it was expected that the output would be doubled. The White Limes, Limited, at Ottoshoop had an output of 4,200 tons of lime, valued at 8,400, and the Lucerne Lime Fertiliser Company manufactured 11,893 tons of fertilisers, valued at £10,091.

The Middelburg Magistrate advocated the development of the large areas of first-class iron ore in the district for the production of pig-iron, and he also recommended the erection of steel converters and roller mills, which would enable pig-iron to be dealt with and the country placed in an independent position as regards imports. Antimony was mined to the extent of 4,151 tons, valued at £4,600, in the Pietersburg district. Most of this came from the "Gravelotte" Mine in the Murchison Range, where the ore was hand-sorted but not otherwise treated before shipment. At the "Monarch" Mine the ore was smelted. The striking success of the Asbestos Mine on the farm "Penge," on the Lydenburg side of the Oliphants River had attracted attention to the deposits of asbestos on the Pietersburg side of the river, extending for a distance of about 60 miles from Mafefis to Chunispoort, and the Magistrate confidently looked forward to considerable developments. Corundum was found over a large part of the district, but was at present only worked in the portion of the low country north of the Olifants River, on both sides of the railway between Lagalies and Banderlierskop. The demand for this mineral had been stimulated by the war, but it was expected to continue afterwards, as the use of abrasives in engineering work continually increases. But for shipping, the export would be counted in thousands of tons per mensem instead of hundreds as at present. Farmers and others with capital could engage profitably in this industry. Mica in large sheets was found near the junction of the Olifants and Selati Rivers. A few tons had been cut and sold in Johannesburg.

The only stable and flourishing industries in the Pretoria district were the Cement Works at Daspoort and the Silverton Tannery. The latter had developed into considerable proportions, and was a concern of great promise. Iron mining was started on the town lands during the year, with excellent prospects. The rush to the Kameelfontein alluvial diamond diggings had subsided to a large extent, and a number of families were reported to be stranded there in most distressing circumstances. Tin ore was being mined on the farm Allemansdrift and a considerable quantity of concentrates had been shipped. The Ekunuzana Gold Mine in Nkandhla appeared now to be fairly well established and was paying quite a good dividend. The Magistrate thought there was a prospect of considerable development of this mine. The Dumbe Coal Mine in Paulpietersburg had reached the productive stage. The dairy industry had grown considerably, due to the fact that a creamery depot and a cheese factory had been opened in the town. The Pietermaritzburg district boasted of many industries, such as carriage and wagon factories, brick and tile works, printing and book binding establishments, saddleries, mills, monumental works, clothing factory, boot and shoe factory, breweries, abattoirs, farmers' co-operative meat industries, cold storage works, wattle-bark extract tannery, biscuit factory, as well as extensive railway works. There were also a leather tannery and a basket factory doing well. All the industries made use of the South African raw material. One enterprising farmer in the Unvoti district was artificially producing heavy poles for the mines. Under hydraulic pressure, four wattle poles were bound together, and they were said to be stronger than solid poles of equal size. The output of the Utrecht Collieries was 109,782 tons. New collieries were floated in the Vryheid district, namely, the Enyati Colliery, Ltd., and the Bernica Colliery, Ltd., both incorporated in and floated with capital from Mauritius. The Enyati Mine claimed to be the most remarkable property in Africa, as far as coal was concerned, there being about 70 millions of tons of coal in sight. There were two main seams, the upper one 8 feet 6 inches of clean coal, and the lower, 5 feet. The outcrop stretched for about eight miles and the railway line ran immediately under this outcrop for the whole distance. The distance between the two seams was 48 feet, and the entire formation was solid sandstone, which was very sound and strong, so that no timber would be required. There should be little gas, if any at all. The water supply was of the best quality, the flow of the spring being about as much as an 8-foot pipe could contain. A plant, which was being constructed in the country, had been designed to deal with 3,000 tons per day. The output of the various mines was as follows: The Vryheid Railway and Coal and Iron Company, Ltd., Hloboane, put out 459,510 tons, employing 61 Europeans and 1,746 natives and Indians. The Tendega Collieries, Ltd., turned out 119,958 tons, and their employees numbered 37 Europeans and 750 natives and Indians. The Bernica Colliery, Ltd., supplied 5,247 tons and employed 6 Europeans and 60 natives. The Vryheid Coke, Ltd., had an output of 6,727 tons of coke, valued at £22,396. The Natal Ammonium, Ltd., put out 32,451 tons of screened coal used in the manufacture of sulphate of ammonia, of which the quantity made was 18,030 tons.

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

MINING QUESTIONS IN THE UNION PARLIAMENT.

Mr. Creswell and the Custodian—Miners' Phthisis Legislation—New Ophir—Mining Leases.

THE WIT, DEEP AND THE CUSTODIAN OF ENEMY PROPERTY.

In the Assembly on Tuesday, Mr. Creswell asked the Minister of Finance: (1) On what occasions since the appointment of the Custodian of Enemy Property had that official voted or sent his proxy to other persons to vote at company meetings in respect of enemy shares vested in him, at what dates were such meetings held, and of what companies and what were the names of the persons to whom he gave his proxies; (2) what were the names of the director of the Wit. Deep and the Director of the Central Mining and Investment Company who had interviewed him last December for the purpose of obtaining his proxy for the Wit. Deep meeting, and where and on what dates had the interview or interviews taken place; (3) on what date had the Custodian received the circular from the Wit. Deep and Knight Central Shareholders' Protection Association containing an extract headed "the ignorant investor God help him"; (4) had this circular been addressed to him officially in his capacity as Custodian and had he also received other circulars from the same body dated October 1, 1918, and January 2, 1919; (5) what steps, if any, beyond interviewing the two directors referred to above, had the Custodian taken to ascertain the merits of the matters in dispute between the two contending parties of non-enemy shareholders in the Wit. Deep before deciding to throw the weight of the voting power of the enemy-held shares on to one side; (6) had the Government come to any decision as to the ultimate destiny of the enemy-owned shares at present vested in the Custodian, i.e., whether they were to be handed back to enemy subjects after the war or otherwise dealt with; and (7) would the Minister lay on the table all regulations made by the Governor-General-in-Council under Act No. 39 of 1916, Section 4, prescribing the powers and duties of the Custodian?

The Minister of Finance replied as follows:—(1) On no occasion previous to the meeting of the Wit. Deep has the Custodian of Enemy Property voted or sent his proxy to other persons to vote at company meetings in respect of enemy shares vested in him. (2) Mr. Boyd and Mr. Raleigh interviewed him about December 19 at Pretoria. Mr. Raleigh, it appeared, was at the time of the interview not a director of the Wit. Deep, as he had been retired as the result of the action by the Wit. Deep and Knight Central Shareholders' Protection Association at a previous meeting. It was in favour of the wish of a body of shareholders who desired that Mr. Raleigh should be re-elected that the Custodian gave his proxy. (3) On August 28, 1918. (4) It was addressed to a person who is chief clerk in the Custodian's office, and at that office a further circular dated January 2, 1919, was also received. (5) Apart from an interview, literature issued by the contending parties and information from other sources were considered by the Custodian before he made his decision. (6) The answer is in the negative. (7) No regulations have been issued under the section referred to.

MINERS' PHTHISIS.

The Minister of Mines announced, at the instance of Mr. Graumann, that the report of the Miners' Phthisis Commission was received on December 1, having been delayed by the influenza epidemic, and was at once despatched to the printers. There were two separate reports, each signed by three members and one signed by one member and two separate bills added. The Government proposed to legislate as soon as possible after the publication of the report. "On what lines?" asked Mr. Madeley. "Wait and see," was the Minister's tart response.

A CORNER HOUSE DIRECTOR AS PUBLIC DEBT COMMISSIONER.

A reply in a few days was promised by Mr. Orr to Mr. Rheeder's query: (1) Whether he would give the reasons why a director of the Corner House group was chosen as one

of the three Public Debt Commissioners? (2) Whether in the event of other vacancies occurring in the above body representatives from other financial groups would be chosen? (3) Whether it is the policy of the Government in making these appointments to pass by experienced civil servants; and (4) whether the Public Debt Commissioners received any fees, and if so what were their fees?

NEW OPHIR G.M. CO., LTD.

Mr. Malan stated, in reply to a question to the Minister of Mines, that the property formerly owned and worked by the New Ophir Gold Mining Co., Ltd., Barberton district, is now being worked under the name of the Uitkyk Gold Mining Co., Ltd., though it was believed that there had been one or two changes in the directorate. This new company had for its chairman the person who acted in a similar capacity to the New Ophir Gold Mining Co., Ltd. It was believed to be substantially true that the New Ophir Gold Mining Co., Ltd., went into liquidation in the early part of 1918, leaving three months' wages due to its European and native employees and many other debts in the district unpaid. Complaints had been made that the Uitkyk Gold Mining Co., Ltd., at present owed various sums in the district for wages due to Europeans and native employees and for stores supplied. The question of instituting proceedings against the management under the Native Labour Regulations Act of 1911 is now under consideration. As the company is registered in the Cape Province, no steps other than the institution of civil proceedings would appear to be open to other creditors of the company. In the meantime the department is in communication with the chairman.

MIXING LEASES.

The mining leases question provided the most interesting debate of the week, Mr. Creswell employing no new arguments, proposed a motion that the Government should issue no more leases during the life of the present Parliament, unless his strictures on the methods of the Springs Mines in issuing shares were an argument. For the rest, he based himself on doctrinaire grounds in opposing private enterprise in mining. Mr. Graumann spoke strongly in opposition. In the first place, said Mr. Graumann, to secure the exploitation of the East Rand areas already leased, the State would have required to embark from eight to nine millions sterling. Would Parliament have voted such a sum? In the second place, the State could not have started one mine, keeping the others back till it was seen how the first prospered; it was necessary to replace old mines concurrently in their going out of production, but on Mr. Creswell's plan there would be big time gaps involving much industrial dislocation. In the third place, the existing Parliament might live another twenty months, and it was undesirable to lose that period in starting mines which would take five years apiece in reaching the producing stage, especially as Rand gold mining had already passed its zenith, and was now on the down grade. The Minister of Mines also replied, and Mr. Creswell's motion was defeated by a big majority.

MINING MEN AND MATTERS.

It is reported that a revival of interest in the Klein Letaba Gold Fields is impending.

* * * *

Sir H. Ross Skinner and Sir R. Sothorn Holland, Bart., have arrived in Johannesburg from England.

* * * *

We understand that Mr. B. Oppenheimer, of the Anglo-American Corporation, intends to reside in Johannesburg in the near future.

LATEST RESULTS FROM THE "C.M.S." GROUP.

Progress on the Springs, Brakpan and Daggafontein Mines.

BRAKPAN MINES.

The report of the directors of the Brakpan Mines, Ltd., for the quarter ended December 31 shows that the working profit for the year 1918 was £356,102 18s. 2d. The linear development amounted to 3,977 feet, of which 2,200 feet were on reef averaging 9.04 dwts. over a reef width of 39.40 inches. Of the footage on reef 1,105 feet, equivalent to 50.2 per cent., were in payable areas and averaged 15.33 dwts. over 38.89 inches. The re-estimation of the ore reserve as at December 31 is now being prepared and will be published when completed. The cementation of the dolomite series in No. 3 circular shaft was successfully completed and bricking was resumed. A distance of 137 feet was bricked, making a total of 319 feet from the collar of the shaft. Sinking was then resumed and 152 feet accomplished, the total depth of the shaft at the end of the year being 482 feet. During the quarter 334 feet of sinking was accomplished at No. 3 circular shaft. In addition some small water-bearing fissures were successfully cemented. The total depth of the shaft at the end of the year was 1,043 feet, of which 965 feet were bricked or ringed. Capital expenditure incurred during the quarter amounted to £30,383. During the quarter the epidemic of Spanish influenza spread to the native territories, and the resulting shortage of native labour has seriously affected the scale of mining operations. There is now a distinct improvement in the number of natives coming forward.

SPRINGS MINES.

The working profit for the year 1918 was £416,158 18s. 1d. The re-estimation of the ore reserve as at 31st December is now being prepared and will be published when completed. No. 3 shaft was sunk 252 feet during the quarter, making the total depth at the end of the year 444 feet, of which 383 feet are timbered. During the period under review the "green dyke" was sunk through, which somewhat retarded progress. The dolomite series were also passed through, and at the end of the year the shaft was being advanced in quartzite. The quantity of water encountered in the dolomite was negligible. During the period under review debentures of the nominal value of £14,020 were redeemed, in addition to which debentures of the nominal value of £4,560 were purchased. Under the agreement in connection with the acquisition of the lease area the Consolidated Mines Selection Company, Ltd., took up, during the period under review, 3,500 shares in the unissued capital of the Springs Mines at £3 per share. The issued capital now therefore stands at £1,153,500. During the quarter expenditure on lease area capital account amounted to £39,531. During the quarter the epidemic of Spanish influenza spread to the native territories, and the resulting shortage of native labour has seriously affected the scale of mining operations. There is now a distinct improvement in the number of natives coming forward.

DAGGAFONTEIN MINES.

During December the pump station and sump at the bottom of the shaft were completed. Pumping was started during January. A dam has been constructed in the second level south with a view to the adoption of cementation to seal off the flow of water encountered in that heading. An overwinding accident occurred during November, considerably damaging the bottom station and bins. Repairs are practically completed, and it is expected that development will be resumed early in February. In No. 2 shaft the cementation of the lower portion of the dolomite series was successfully completed early in October, sinking being resumed on the 14th of that month. The footage sunk for the quarter was 346 feet, making the total depth of the

shaft 1,028 feet, of which 1,012 feet are timbered. The Rand Water Board purchased 39,364,000 gallons of water during the quarter. The three-year options, granted under the flotation agreement, to take up 250,000 shares at par in the capital of the company expire on March 27, 1919. During the quarter 527 ordinary shares of £1 each have been allotted in respect of options exercised in London, the issued capital of the company now therefore stands at £699,765.

WEST SPRINGS.

At the end of the year preliminary sinking to a depth of 74 feet had been accomplished in No. 1 shaft, of which 60 feet were timbered. The erection of the headgear and installation of sinking equipment is now nearing completion, and it is expected that sinking will be resumed during February. The collar set at No. 2 shaft has been completed, and work on the headgear and equipment is progressing satisfactorily. The west haulage, Springs Mines, reached the boundary during October. The haulage has been extended into the West Springs area, and is known as the east haulage, west face. The details of the development accomplished to the end of the year by Springs Mines in the West Springs property, under the working agreement, are as follows:—East haulage, west face: Footage sampled 130, reef width 17.42 inches, assay value 3.08 dwts.; east haulage engine chamber: Footage sampled 5, reef width 31.00 inches, assay value 2.55 dwts.; totals and averages: Footage sampled 135, reef width 17.93 inches, assay value 3.05 dwts.



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PROGRESS ON THE BARNATO MINES.

State Mines Big Ore Reserve—Rapid Work at the New State Property— Effects of the Influenza.

THE quarterly reports of the Barnato Companies have the following.—

CONSOLIDATED LANGLAAGTE.

Total profit for the quarter, £28,104. The expenditure on capital account amounted to £1,093, and debenture interest £1,375. The influenza epidemic has had a considerable effect on the results for the quarter of all the mines of the group, and there has been a steady exodus of natives since the beginning of October. At this mine the tonnage crushed showed a decrease of 13,100 tons. The grade was about 5d. per ton lower, and working costs increased by 1s. 5d. per ton as compared with the previous quarter. The gross profit showed a decrease of £15,022. The development footage sampled totalled 2,897 feet, and gave the following results: Payable, 942 feet, having an average value of 40.8 dwts. over 14 inches of reef. Unpayable, 1,955 feet, having an average value of 9.8 dwts. over 11 inches.

GINSBURG.

Total profit for the quarter, £3,347. The grade of the ore milled showed an improvement to the extent of 2s. 4d. per ton, and, although there was a decrease of 4,490 tons in the quantity of ore crushed, the gross profit was £1,387 higher than that for the previous quarter.

GOVERNMENT G.M. AREAS.

Total profit for the quarter, £235,703. The expenditure on capital account amounted to £8,303. There was a decrease of 40,500 tons in the quantity of ore crushed as compared with the previous quarter. This was entirely due to the large number of natives who left for their homes on account of the influenza epidemic. There was an improvement in grade of 2s. 4d. per ton, but working costs were 1s. 5d. per ton higher. The gross profit as compared with the preceding three months shows a decrease of £15,297. The development footage sampled totalled 6,780 feet, and gave the following results: Payable, 5,090 feet, having an average value of 17.2 dwts. over 41 inches of reef. Unpayable, 1,690 feet, having an average value of 3.6 dwts. over 41 inches. The recalculated payable ore reserves at December 31, 1918, were estimated at 9,445,000 stopping tons of an assay value of 8 dwts. over a stopping width of 78 inches.

LANGLAAGTE ESTATE.

Total profit for the quarter, £41,576. The expenditure on capital account amounted to £5,435. The grade showed an improvement of about 10d. per ton, and this helped to make up for the drop in profit due to the reduced tonnage, which was 11,270 tons less than that in the previous quarter. The gross profit, therefore, showed a decrease of only £1,751. The development footage sampled totalled 2,124 feet, and gave the following results: Payable, 1,353 feet, having an average value of 32.9 dwts. over 15 inches of reef. Unpayable, 771 feet, having an average value of 9.0 dwts. over 12 inches. A block of 22 claims situated at the southern boundary of the Block "B" Mine has been purchased from the New Era Company at a reasonable price. The Langlaagte Estate's nearest underground workings to this block have disclosed ore of satisfactory value, and it is anticipated that the new ground will prove of considerable value to the company.

NEW PRIMROSE.

Total profit for the quarter, £4,054. The tonnage crushed was 2,000 tons less than that for the previous quarter, and as there was little variation in grade and costs, the gross profit was reduced by £437. The development footage sampled totalled 178 feet, and gave the following results: Payable, 80 feet, having an average value of 6.2 dwts. over 41 inches of reef. Unpayable, 98 feet, having an average value of 2.1 dwts. over 46 inches.

NEW UNIFIED.

Total profit for the quarter, £6,976. There was a decrease of 1,800 tons in the quantity of ore milled, and working costs were about 8d. per ton higher than for the previous quarter. The grade showed a slight improvement, and the gross profit was only reduced by £942. The development footage sampled totalled 155 feet, and gave the following results: Payable, 15 feet, having an average value of 9.9 dwts. over 20 inches of reef. Unpayable, 140 feet, having an average value of 7.1 dwts. over 12 inches.

RANDFONTEIN CENTRAL.

Net loss for the quarter, £14,146. The expenditure on capital account amounted to £56,909 and debenture interest £37,789. This company has been passing through a very trying and difficult period, both as regards its white and coloured labour. The white employees on the "Block A" Section, which is one of the best sections of the property, were on strike two weeks in December; and there has been a very heavy drop in the number of native labourers owing to the influenza epidemic. It will be seen that the tonnage crushed was 54,800 tons less than for the previous quarter, and the results show a loss of £14,146. The development footage sampled totalled 9,375 feet, and gave the following results: Payable, 8,910 feet, having an average value of 23.3 dwts. over 16 inches of reef. Unpayable, 465 feet, having an average value of 6.2 dwts. over 27 inches.

VAN RYN DEEP.

Total profit for the quarter, £148,293. The expenditure on capital account amounted to £2,114. There was a decrease of 13,070 tons in quantity of ore milled as compared with the previous quarter. The yield and working costs both showed an increase of over 1s. per ton, and the gross profit was less by £14,270. The development footage sampled totalled 919 feet, and gave the following results: Payable, 845 feet, having an average value of 19.7 dwts. over 43 inches of reef. Unpayable, 74 feet, having an average value of 7.8 dwts. over 24 inches. The recalculated payable ore reserves at December 31, 1918, were estimated at 2,445,759 stopping tons of an assay value of 9 dwts. over a stopping width of 70 inches.

WITWATERSRAND G.M. COMPANY.

Total profit for the quarter, £14,369. The expenditure on capital account amounted to £3,066. The quantity of ore crushed was 9,350 tons less than that for the previous quarter. Working costs were about 1s. per ton higher, and as the grade was slightly lower the gross profit shows a decrease of £8,368. The development footage sampled totalled 1,820 feet, and gave the following results: Payable, 1,200 feet, having an average value of 13.6 dwts. over 39 inches of reef. Unpayable, 530 feet, having an average value of 3.6 dwts. over 50 inches.

NEW STATE AREAS.

The North Shaft was sunk 63 feet to a total depth of 145 feet, and the South Shaft was sunk 3 feet to a total depth of 103 feet. Sinking has been stopped for some time to permit of the permanent headgears and hoists being erected. At the North Shaft, the erection of the headgear is making good progress. The boilers are ready for steaming, and the erection of the boiler-house has been commenced. The installation of one of the directing hoists is also in hand. At the South Shaft, the erection of the headgear has been completed, and good progress is being made with the erection of one of the direct-acting hoists. Four boilers are ready for steaming and the boiler-house has been completed. A 35-drill compressor has been purchased, and will be erected at the South Shaft.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Rand Gold and Peace Problems.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—The articles on "Rand Gold and Peace Problems" suggest many things to the man who is interested in any way in the "reconstruction" which seems to be the order of the day in all quarters of the earth. We are reminded that in these complicated problems of governments and after-war adjustments, gold and credit may play a very big part. But the whole subject is evidently one of great complexity, and it seems necessary to get expert evidence to bear on it before any considerable changes are attempted. What surprises me in the circumstances is the apathetic attitude of our "leaders of thought"—that is, members of our technical societies, our politicians, and mining and labour leaders. They ought to give the public some lead in these matters. In particular professors and graduates of the universities should be heard. The dull routine of those mills of thought represented by our educated and be-lettered professors remind one of a flour mill—there is nothing ever heard from them except a dull, dusty rumble. An intellectual rabbit would surely have something to say at this time when the world is re-making under the dictation of an American university professor with political gifts. Does gold affect prices and wages and strikes and tub-thumpers short of oratorical ideas? Is the Labour programme, as your correspondent suggests, based on a false philosophy that omits brains and counts muscle as the only valuable thing? If these things are true surely the leaders of the educated and thinking section of the public should be heard, now or never. Many of us are vaguely uneasy about the effects of the war on all classes and on social stability. We want light and leading.—Yours, etc.,

AN EX-MINER.

Johannesburg, 5th Feb., 1919.

[We intend to follow up this suggestion by inviting views on the important issues raised.—Ed.]

Jack-Hammers and Drill Steel.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Many thousands of pounds are being spent by the mining groups on jack-hammers. Consulting engineers and mine managers are studying the question as to which is the best machine on the market, etc. In my opinion, greater attention should be given to the tempering, sharpening and shanking of the drill steels. A few days ago I watched the Kafir drill sharpeners at work on a mine where the officials are endeavouring to make the jack-hammer a success. The drills were being sharpened at a rapid rate, but the natives

were absolutely ignorant of the method of tempering or hardening the bits or cutting edges. They have no knowledge whatever of the colour of the heat required to harden the drills. These were plunged into the water at a yellow to a dull red heat and several times at almost black heat! How can jack-hammers be a success when such steels are used? I examined a number of shanks and found the striking end on some broken and not square; this is fatal to pistons. The wonder is that jack-hammers do as well as they do under such conditions. The best method of tempering drill steels that I have seen on these fields is at the Brakpan Mines, where the steels are re-heated for tempering by two natives and handed to a third who plunges them when the requisite heat colour is obtained. A study of this method is well worth the consideration of other mines. Considerable saving would be effected by the appointment by each group of a qualified "Steel Temperer and Drill Sharpener" to inspect this work. The amount of steel used would be considerably lessened, the cost of upkeep of the rock drills would be less, and the number of holes drilled per machine per shift would be increased.—Yours, etc.,

E. R. PETHICK.

Benoni, 3rd Feb., 1919.

[This seems an excellent suggestion, and the views of some other mining men on the subject would be of interest.—Ed.]

British Columbia Timber.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I beg to advise that under separate cover I am sending you a copy of Bulletin No. 60, published by the Forestry Branch of the Canadian Government. This bulletin treats on the mechanical and physical properties of Canadian Douglas Fir, and will I hope, in connection with "Canadian Woods for Structural Timbers," which I sent you in August, 1917, prove of interest and service.—Yours, etc.,

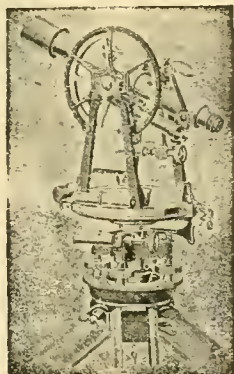
W. J. EGAN,

Canadian Trade Commissioner.

Capetown, 29th Jan., 1919.

[The bulletin in question is at the service of any of our readers interested.—Ed.]

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.



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THE JANUARY GOLD OUTPUT: GROUP RETURNS.

Barnato Group.

The results of operations of the Barnato group for January are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	41,300	£51,645
Ginsberg	75	11,000	12,899
Government Areas	180	106,500	188,344
Langlaagte Estate	200	45,170	55,655
New Primrose	90	17,300	16,343
New Unified	60	13,400	12,294
Randfontein Central	600	143,000	160,901
Van Ryn Deep	90	42,900	95,747
Witwatersrand	215	35,550	38,158

Totals and averages ... 1610 456,120 £631,986

December totals ... 1610 409,790 £575,754

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ...	£42,786	20.719	£9,045
Ginsberg	12,460	22.654	545
Government Areas	113,913	21.392	75,027
Langlaagte Estate	42,604	18.861	13,172
New Primrose	15,206	17.579	1,223
New Unified	10,105	15.082	2,224
Randfontein Central	152,608	21.344	9,123
Van Ryn Deep	48,569	22.643	48,168
Witwatersrand	35,276	19.846	4,416

Totals and averages ... £473,527 20.763 £162,943

December totals ... £440,449 21.496 £139,290

Consolidated Mines Selection Group.

The following are the results of operations for the month of January:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines	110	42,000	25/ 10.572
Springs Mines	80	33,350	25/ 3.421

Totals and averages ... 190 75,350 25/ 7.407

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines... ..	£85,224	40/ 6.997	£30,874	14/ 8.425
Springs Mines	72,450	43/ 5.379	30,287	18/ 1.958

Totals & averages £157,674 41/10.213 £61,161 16/ 2.806

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of January, 1919:—Tons crushed, 2,784, yielding 971 fine ozs.; estimated value of month's output, £4,040; estimated loss for the month, £567. The labour position is steadily improving, but the grade for the month was lower.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of January, 1919:—Central Mines: Tons crushed, 9,300, yielding 2,506 fine ozs. Elandsdrift Mine: Tons crushed, 1,080, yielding 547 fine ozs. Vaalhoek Mine: Tons crushed, 1,000, yielding 347 fine ozs. Estimated value of month's output, £14,128. Estimated loss for the month, £4,148. The labour position is steadily improving, but the supply is still inadequate. The grade at Central Mines was low during the month. Towards the end of January Elandsdrift Mine was flooded as a result of sudden abnormal rainfall.

Albu Group.

The January operations of the producing mines of this group were as follows:—

Company.	Tons Crushed.	Total Cost.
Aurora West	12,000	£14,177
Meyer and Charlton	12,750	16,342
New Goch	14,300	13,133
Roodepoort United	24,000	24,831
Van Ryn Estate	32,600	27,642
West Rand Consolidated	30,500	34,945
	126,150	£131,070

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	23.63	£10,890	*£3,287
Meyer and Charlton	25.64	38,887	22,545
New Goch	18.37	13,034	*99
Roodepoort United	20.69	23,865	*966
Van Ryn Estate	16.96	31,775	4,133
West Rand Consolidated	22.91	36,104	1,159

£154,555 £23,485

* Loss.

Shortage of native labour continues adversely to affect all mines of the group. It is satisfactory to note, however, that a slight improvement in this direction is beginning to manifest itself.

Aurora West.—Arrangements for the supply of additional compressed air were completed towards the end of the month. The new Jackhammers have been delivered on the mine and are being started up as rapidly as circumstances admit.

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ALL OF WHICH ARE IN GOOD CONDITION:

ONE SINGLE DRUM HOIST, Cylinders 17in., Stroke 50in., Drum 96in. x 6in.

ONE TANGYE HAULING ENGINE, DIRECT DRIVE, Cylinders 18in., Stroke 36in., Acting Hoist, Drums 84in. x 30in.

ONE MILL ENGINE, TANGYE COMPOUND, Corliss Valve Gear and Fly Wheel, H.P. Cylinder 16in., L.P. Cylinder 28in., Approximately 250 H.P., Stroke 42in., Fly Wheel 16ft. x 2ft 3in. face, with Worthington Condensing Plant.

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LEAVES FROM A PROSPECTOR'S NOTE BOOK.

I.—Sandy's Prospect.

THE naming of a new stake or block of claims is always a matter for deep deliberation amongst prospectors. It is no ordinary circumstance this, no event to be regarded with levity. The christening of a new "prospeck," and especially a "prospeck" which promises well is one of the most serious moments in the prospector's life. He is called upon to name the infant prodigy which has been evolved by his toil and brains, and on its appellation much depends. Prospectors are very superstitious on this point. An ill-chosen name may, in the estimate of many of them, mar the future of the richest free milling proposition on earth. And similarly a fortunate designation may turn a poor little six-inch leader into a gigantic and high-grade lode even before water level is reached. Some citizens of the veld and bush go nap on female names. Others declare that to give a mine a woman's name is merely courting disaster right from grass. In support of this view it may be pointed out that few Rand and Rhodesian mines which have borne female names have ever blossomed out into really profitable ventures. And one calls to mind a host of failures which have carried feminine designations—the Agnes Munro, Violet, Beatrice and Inez, for instance. Some prospectors have a penchant for the names of wild animals and birds; others indulge in the names of flowers; and others again go in for local or native terms. Generally speaking women's names are accounted unlucky, and it was therefore a surprise to us when old Sandy Smithers, who was "a verra superstetious man," called his new Low Country venture the Priscilla.

Sandy was a dour old stick, who was prospecting in the Murchison long before the other oldest inhabitant had ever dreamed of wandering into the Zoutpansberg. A geologist who once visited Leydsdorp and who met Sandy there declared that Sandy was probably of pre-carboniferous age and that his face was undoubtedly lethyosaurian. However scientifically true these statements may have been, it is undeniable that Sandy was very, very old and that his past was enveloped in a shroud of archæan mystery. No one knew when Sandy migrated from Caledonia, or how he migrated, or why he migrated. No one knew how the old man lived—little fortune had come his way in the last twenty years. But the new "prospeck" was reported to be extraordinarily rich, and it seemed that after all Sandy might have a decent funeral. Much surprise was therefore evinced in Leydsdorp when it became known that Sandy had christened his Eldorado "Priscilla."

We were discussing the matter one wet summer's night in the bar. Jem Mayne, who was a Canadian, held very decided views on the subject. "Why, the man's clean stark starin' mad to call his mine by a woman's name," he declared. "He must ha' gotten bats in his belfry for sure."

"Well, he's doin' pretty well out of it," put in Smale, the transport rider. "I was out there two days ago. Sandy's down 150 feet and she's widenin' and gettin' richer in depth. He's 'most paid for his five stamps and all exes out of what he's took out already, an' he's knockin' out three-fifty a month. She's the prettiest looking thing in quartz I've ever clapped eyes on. Two ounces to the ton at the bottom, and there ain't a trace of antimony nor dyke."

"Waal, anyways," retorted Mayne, "I reckon he's crazy to go an' name her Priscilla. I'll tell yah gents right now that it's my well considered voow that if you changed the name of the New Modder to the Mary Anne the show would have to put up shutters next season. I knew a guy up in Gwanda who'd got a show that was givin' him four hundred a month in clear profit. He'd called it the Full House—mighty fond of a game o' bluff now and then he was. So he gets his missus up from the Cape. Doris was her name, and that shemale warn't content until she'd re-christened that there mine Doris too. Waal within a year that fellah was humpin' his swag round the country, an' his wife an' kids was a'most starvin' in Bulawayo. Any mine with a name like Doris couldn't last long. An' I don't care how good this show of Sandy's may be, it's goin' to peter out, chums, if he calls it the Priscilla."

"Wha's takin' my name in vain?" suddenly exclaimed a voice from the back.

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THREE SEAS BRAND.

We all turned round, and lo and behold, there was old Sandy Smithers, with a broad and prosperous grin on his face. Sandy was now a coming man, and a dozen voices clamoured for his participation in the drinks. Sandy accepted Mayne's offer, and then fixing him with his aged stare remarked, "Ah heerd what ye was sayin' about the wimmen an' the mines, Canadee. But Ah'm tellin' ye ye're sair wrang this time: there's muckle gelt ta come out o' th' mine whither she's named Priscilla or Jean or no."

"Canadee" shook his head in stolid dissent.

"But whyfore d'ye call a good prospect Priscilla?" asked the transport contractor.

"Aweel," said Sandy, with a serious look in his eyes. "I namet her in memory o' that ither Priscilla that was the apple o' ma een in the lang gone byes."

Here was an unsuspected romance. We had not associated dour old Sandy Smithers with a love affair. And yet, why not? Sandy in his earlier pleistocene days might well have been a braw lad, and might he not have loved a lassie? One is too apt to think that old eyes cannot ever have looked young and that old lips have never snatched the kiss of youth. Almost in reverence we listened attentively to Sandy's appreciation of his Priscilla of long ago.

"She was the bonniest that iver left the Clyde," he went on, and we watched the whisky and the remembrances quicken his pulse and redden the blood as he talked.

"She was bread an' meat an' drink to me for many a year. She was fair as the braes round Loch Lomond, an' ivery man in Sauchiehall Street covited her." Sadness dimmed the old man's eye, and we waited and listened in silence.

And then Canadee broke the spell. "What happened, Joek?" he asked tersely.

"I sold her," rejoined Sandy. "And muckle bawbees did I get for the bonny lass."

"Sold her!" we ejaculated. "Sold her!" Here was a revolting conclusion to the old man's romance!

"Aye, sold her. Perhaps ye dinna ken that in my youth days I was a fisherman and Priscilla was a boat—a smack. Fine she was an' bonny, but the price was too much a temptation and she went."

Relieved at the knowledge that the first Priscilla was only a fishing smack after all and not a poor weak woman to be bartered away at will we waited for Sandy to continue further.

"An' that's what I'm going to do with this Priscilla, too," he said. "I'll sink her another two fathom and broaden her out a bit and then I'm goin' to put her under option to a firm that's got mair bawbees than Andrew Carnegie."

Sandy left for his mine early the next morning. But not too early for "Canadee" to greet him with an "Au revoir."

"Now mind that two more fathom don't beat ye," counselled Canadee. "I'd leave her just as she is if I was you. Option her now—I don't trust mines, 'specially mines with wimmen's names."

"I'm tellin' ye my Priscilla is all richt," rejoined Sandy. "She's goin' to be a rare good bairn to her auld Faithier in his last years. Aye, twa fathom mair—only twa fathom." And so Sandy wandered off to his mine away the other side of the bush-robed kopjes, and Leydsdorp waited anxiously.

Canadee was right after all. The very next blast blew out a nasty tough looking piece of diorite, and though Sandy sunk fast and furious he never bottomed it. And when he tried to "open her out a bit" he cut more diorite. In a few months Sandy had put all his savings into that diorite and even the Oceana Company wouldn't look at it.

Is there anything in this curious superstition? I suppose not. Like all other superstitions it is, I imagine, silly and nonsensical. But it has changed Sandy Smithers into a philosopher. "Mines is like wimmen," is his everlasting

theme. "They're fickle. Ye canna trust them." There must be something in what he says. Stock Exchange quotations seem to support the view at any rate.

Sandy is far too nowadays to bother about women. But he still apparently concerns himself with mines. For I have just heard that he has located another wonderful "prospeck." It is said to go three ounces over four feet. And it rejoices in the unromantic name of "The Boiling Billy."

L.

A message from Kimberley says the proclamation of alluvial diamond diggings at Home Rule, on the Harts River, adjoining Killarney, 28 miles from Taungs by road, is expected to take place about the middle of February. The definite date is to be announced later. At present very active digging operations are being carried on there. The plot-holders produced about £10,000 worth of diamonds last month. As the ground is reported to be rich, an exciting rush is expected.

Waterproofing of drawings and tracings so that they can be used in wet places, is done by the use of a preparation composed of rubber and benzol. A convenient quantity of the solution may be made by adding a piece of rubber about 4in. square to a half pint of benzol in a quart jar. The rubber will soon swell to three or four times its former bulk, and will be ready for use in 24 hours. To prepare for use, pour about half the above quantity in another jar for thinning down. If drawings are to be coated, use a rather thin solution that will spread well under a brush. The drawing should be coated on both sides.

According to Mr. E. W. Rice, President of the American Institute of Electrical Engineers, when discussing railway electrifications as a possible future opening for coal saving in the United States, the consumption by steam-driven railways amounted to 25 per cent. of the total coal mined, and the coal was used under such inefficient conditions that six pounds were required per horse-power hour. Electric traction could boast an efficiency three times as high. Accordingly, if all railways were converted to electricity a saving of 16½ per cent. of the total coal consumption could eventually be made—far more than could be achieved by suppressing lighting altogether.

In an article in *Génie Civil*, the author points out that as soon as peace is declared there should be a great harvest of sunken vessels which can be raised to the surface again. The greatly improved methods now available will permit of raising vessels from much greater depths than was formerly possible; the British Admiralty has officially reported 12 million tons of vessels sunk between August, 1914, and January 1st, 1918. Before the war the value of a ship and its cargo was on the average about £25 per ton; at present it is worth three times as much. The author then proceeds to describe the various methods used for refloating sunken vessels. If they are only partially submerged, it is sufficient to close all openings in the hull and then pump out the vessel. If totally submerged there are four processes: (1) To build a cofferdam over the vessel and pump out the water from it faster than water enters—this method was employed for raising the Walküre at Tahiti; (2) to build a tight cofferdam around the hull, then pump it out and repair the damage—this was the method used in raising the Maine and the Liberté, the latter of which was filled with projectiles; (3) the water may be forced out of certain compartments of the vessel by compressed air, but these compartments must first be rendered water-tight; and (4) the breach in the hull may be temporarily repaired by divers and then a cofferdam may be built over one of the hatchways and the water pumped out of the hull sufficiently to enable the vessel to be refloated.

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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Output and Profit Returns for the Past Six Months—Compiled from Chamber of Mines' Returns.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax, Miners' Phthisis Contributions, etc.

AURORA WEST.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	14,100	16,349 22 11	22 2	508 0 9
August	14,350	16,260 22 8	21 2	918 1 3
September	13,600	15,653 23 0	22 0	515 0 9
October	12,700	14,043 21 2	23 4	*932 1 6
November	11,800	12,624 21 5	24 9	*2,092 3 7
December	10,700	10,789 20 0	25 6	*2,934 5 6

* Loss.

BANTJES CONSOLIDATED.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	19,500	23,422 24 0	23 7	*95 0 1
August	19,500	23,256 23 3	23 11	*520 0 6
September	20,100	25,329 25 2	23 6	1,171 1 2
October	18,150	23,617 26 0	23 2	2,129 2 4
November	21,000	25,724 24 6	17 4	6,992 6 8
December	7,130	12,909 35 2	18 10	5,844 16 5

* Loss.

BRAKPAN MINES.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	52,000	94,223 36 2	24 3	30,080 11 7
August	55,000	95,302 34 7	23 2	30,193 11 1
September	51,000	87,558 34 3	25 0	24,179 9 6
October	49,000	81,748 33 3	26 5	17,721 7 3
November	45,000	80,507 35 9	26 4	21,052 9 1
December	44,000	85,052 38 7	26 2	26,140 12 0

CITY DEEP.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	58,300	111,252 38 2	23 6	10,347 13 10
August	57,500	106,679 36 11	24 3	34,306 11 11
September	52,500	100,280 37 9	25 1	30,416 11 7
October	49,500	92,159 37 3	28 2	20,566 8 4
November	46,500	88,731 38 2	30 6	15,893 6 10
December	45,000	91,127 40 6	29 7	22,728 10 1

CITY AND SUBURBAN.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	22,583	36,518 32 3	27 6	4,654 4 1
August	20,543	32,491 31 8	31 0	5 —
September	17,005	27,627 31 9	36 5	*1,009 4 9
October	19,053	30,974 32 6	32 0	*163 0 2
November	16,490	33,413 40 2	37 10	1,115 1 9
December	15,945	31,624 39 8	39 2	*234 0 4

* Loss.

CONSOLIDATED LANGLAAGTE.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	45,100	55,607 24 0	18 1	11,873 6 7
August	43,000	56,240 26 0	19 3	14,865 6 11
September	39,000	53,194 27 3	20 8	12,843 6 7
October	40,000	50,301 25 0	20 3	9,886 4 11
November	36,600	47,906 26 1	21 4	8,848 4 10
December	37,400	47,587 24 6	20 9	8,835 4 9

CONSOLIDATED MAIN REEF.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	57,140	76,510 26 9	22 4	11,127 3 11
August	53,150	71,352 28 0	23 9	10,140 3 10
September	48,400	71,731 29 8	25 2	9,625 4 0
October	46,310	69,799 29 4	25 11	8,183 3 6
November	41,700	62,985 30 3	28 1	3,026 1 5
December	43,120	65,136 30 2	27 5	4,833 2 3

CROWN MINES.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	165,000	231,319 28 1	22 8	43,214 5 1
August	161,000	226,991 28 2	22 8	40,159 5 0
September	156,000	220,865 28 3	23 5	33,091 4 3
October	147,000	206,788 28 0	23 3	31,483 4 3
November	134,000	188,620 28 1	25 3	15,537 2 4
December	132,000	195,379 29 5	25 11	21,596 3 3

DURBAN ROODEPOORT DEEP.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	25,300	37,227 29 0	27 0	2,250 1 9
August	25,500	40,086 31 5	28 9	2,594 2 0
September	24,200	35,719 29 1	28 0	1,007 0 10
October	25,600	38,518 30 1	27 9	2,191 1 9
November	25,300	38,399 30 4	28 2	2,002 1 7
December	26,200	38,969 29 5	26 9	3,065 2 4

EAST RAND PROPRIETARY MINES.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	112,000	126,857 22 6	21 4	5,134 0 11
August	113,000	137,019 24 3	23 5	1,926 0 4
September	93,000	112,034 24 1	27 6	*19,694 4 2
October	113,000	131,769 23 4	21 0	11,080 2 0
November	112,000	142,630 25 5	22 10	12,054 2 2
December	115,000	137,792 24 0	21 5	11,802 2 1

* Loss.

FERREIRA DEEP.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	43,300	70,131 32 5	22 3	20,402 9 5
August	38,900	68,843 35 5	22 8	23,494 12 1
September	36,400	54,940 30 2	24 2	9,653 5 4
October	38,700	59,965 31 0	24 2	11,975 6 2
November	33,950	59,252 34 11	26 9	12,592 7 5
December	35,500	57,259 32 3	24 11	11,848 6 8

GEDULD PROPRIETARY.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	46,000	66,337 28 10	19 11	20,249 8 10
August	45,600	65,475 28 9	19 11	19,766 8 8
September	43,000	63,682 29 1	20 10	18,646 8 8
October	41,500	61,647 29 9	20 11	18,082 8 9
November	41,000	60,794 29 8	20 3	19,152 9 4
December	42,500	62,171 29 5	19 9	20,235 9 6

GELDENHUIS DEEP.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	52,100	59,175 22 9	22 4	381 0 2
August	43,100	54,277 25 0	27 0	*3,495 2 6
September	47,348	55,348 23 1	23 5	*1,736 0 9
October	48,100	57,833 24 1	22 11	1,419 0 7
November	45,300	54,978 24 3	24 2	*1,002 0 5
December	47,000	55,679 23 8	23 9	*1,348 0 7

* Loss.

GOVERNMENT AREAS (MODDER).

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	112,000	188,026 33 5	19 9	77,535 13 10
August	118,500	201,923 33 10	19 9	84,722 14 3
September	117,500	202,952 34 3	19 9	87,070 14 10
October	114,500	200,183 35 0	20 2	84,744 14 10
November	100,000	187,274 36 11	21 6	79,648 15 11
December	93,000	171,838 36 6	21 11	69,600 15 0

GLYNN'S LYDENBURG.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	4,130	9,387 44 6	23 1	4,433 21 6
August	4,119	9,307 45 3	25 6	3,872 18 10
September	4,201	8,975 42 9	23 0	3,949 18 10
October	2,604	5,331 40 11	32 0	1,056 8 1
November	540	1,096 —	—	*1,330 —
December	1,318	2,239 34 0	11 2	*726 11 0

* Loss.

JUPITER.

1918.	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
July	22,700	26,561 23 5	23 1	*72 0 1
August	24,200	32,665 27 0	23 0	4,264 3 6
September	25,200	28,800 22 10	21 3	1,734 1 5
October	21,900	26,990 24 8	25 5	*1,391 1 3
November	20,600	24,841 24 0	25 1	*1,466 1 5
December	23,200	28,961 25 0	22 11	1,913 1 8

* Loss.

TO MERCHANTS AND MINE MANAGERS

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KNIGHT CENTRAL.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	24,000	30,758	24 7	23 4	2,004 1 8
August	24,250	33,532	27 8	25 6	2,047 1 8
September	24,500	33,043	26 5	23 5	3,561 2 11
October	23,750	29,921	25 2	23 0	2,014 1 8
November	20,500	27,122	26 6	25 2	778 0 9
December	17,350	27,355	30 1	29 2	1,180 1 9

KNIGHTS DEEP.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	88,100	673,613	16 9	16 3	2,825 0 8
August	86,400	673,813	16 11	16 7	2,612 0 7
September	83,100	70,449	17 0	16 6	683 0 2
October	75,500	693,487	16 10	18 10	*7,489 2 0
November	75,900	65,572	17 3	18 5	*5,512 1 5
December	78,000	61,324	15 9	17 6	*7,941 2 0

* Loss.

(b) In addition, £1,814 taken from reserve.

(c) In addition, £1,869 taken from reserve.

(d) In addition, £1,448 taken from reserve.

LANGLAAGTE ESTATE.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	48,370	55,840	23 1	18 3	11,656 4 10
August	49,000	61,732	25 2	19 2	14,849 6 1
September	49,200	61,027	24 9	18 1	16,411 6 8
October	46,940	59,519	25 3	19 2	14,421 6 2
November	44,260	56,291	25 5	19 4	13,519 6 1
December	44,190	54,783	24 9	18 10	13,113 5 11

LUIPAARDSVLEI ESTATE.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	22,170	22,445	20 3	20 6	*696 0 8
August	22,230	23,286	20 11	20 0	579 0 6
September	20,230	21,000	21 2	21 5	*783 0 9
October	19,440	19,336	19 11	22 0	*2,421 2 6
November	18,690	18,962	20 3	21 8	*1,695 1 10
December	19,350	20,122	20 8	21 6	*1,051 1 1

* Loss.

MEYER AND CHARLTON.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	10,300	35,736	69 5	28 9	20,394 39 7
August	11,320	41,857	73 11	28 2	25,312 44 9
September	11,480	38,527	67 1	27 7	22,099 38 6
October	12,141	40,698	67 0	27 1	23,645 38 11
November	13,000	40,298	62 0	24 5	23,832 36 8
December	13,635	39,763	58 0	23 0	23,518 34 6

MODDER "B."

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	52,000	111,622	42 11	19 4	60,109 23 1
August	58,000	115,334	39 9	18 3	60,013 20 8
September	57,000	114,935	40 4	19 1	58,434 20 6
October	56,500	116,621	41 3	19 11	57,827 20 6
November	56,300	109,455	38 6	19 8	51,244 18 2
December	57,000	113,423	39 7	20 6	52,703 18 6

MODDER DEEP.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	44,000	89,568	40 5	17 7	50,337 22 11
August	44,200	85,706	38 9	17 4	47,072 21 4
September	41,300	85,108	41 3	18 0	47,671 23 1
October	42,100	86,960	41 4	17 5	49,997 23 9
November	41,000	84,092	41 0	17 8	47,580 23 3
December	40,900	84,577	41 0	18 0	47,515 23 3

NEW GOCH.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	17,500	16,311	18 5	19 0	*380 0 5
August	18,600	16,880	17 8	17 10	525 0 7
September	16,650	15,406	18 2	19 1	76 0 1
October	16,050	14,005	17 3	19 2	*1,375 1 9
November	15,200	13,147	16 10	19 8	*990 1 4
December	15,150	13,045	17 0	18 2	*501 0 8

* Loss.

NEW HERIOT.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	12,400	17,917	28 9	24 11	2,137 3 5
August	12,300	16,719	27 2	27 1	*270 0 5
September	12,300	16,197	26 4	27 4	*978 1 7
October	11,800	16,371	27 9	27 6	*181 0 4
November	11,200	15,632	27 11	28 2	*480 0 10
December	11,100	16,439	29 6	27 8	791 1 5

* Loss.

NEW KLEINFONTEIN.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	53,500	72,097	26 7	26 6	*410 0 2
August	60,600	76,752	25 4	23 3	6,127 2 0
September	55,700	75,567	27 2	25 7	2,512 0 11
October	52,820	73,193	27 9	27 1	62 —
November	46,410	62,217	26 9	27 4	*2,633 1 2
December	47,200	57,569	23 8	25 2	*3,287 1 5

* Loss.

NEW MODDERFONTEIN.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	73,000	165,287	45 1	19 7	90,259 21 9
August	72,000	165,848	45 10	20 3	90,174 25 1
September	72,000	170,241	47 3	21 3	90,191 25 1
October	73,000	167,909	46 0	20 3	90,485 21 9
November	73,000	167,650	45 11	20 3	90,318 24 9
December	70,000	159,370	45 6	20 3	85,062 24 4

NEW PRIMROSE.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	17,800	16,277	18 3	16 9	*1,333 1 6
August	18,400	16,600	17 4	16 5	1,471 1 7
September	18,000	15,861	17 7	16 0	1,463 1 7
October	17,400	15,899	18 3	16 10	1,271 1 6
November	17,000	15,355	17 5	16 6	1,306 1 6
December	17,800	15,993	18 0	16 7	1,208 1 4

NEW UNIFIED.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	13,100	12,484	19 1	14 11	2,719 4 2
August	13,600	12,781	18 10	14 11	2,646 3 11
September	12,400	12,021	18 9	15 5	2,446 3 11
October	12,100	12,221	20 2	16 6	2,245 3 9
November	12,100	11,800	19 6	15 11	2,167 3 7
December	13,100	12,165	18 7	14 10	2,445 3 9

NOURSE MINES.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	42,250	54,248	25 8	24 3	2,326 1 1
August	43,100	56,826	26 4	24 4	3,133 1 5
September	40,600	54,609	26 11	25 6	1,779 0 11
October	38,350	53,487	27 11	26 6	1,611 0 10
November	34,500	45,791	26 7	27 7	*4,288 2 6
December	31,200	44,852	28 6	30 5	*3,640 2 4

* Loss.

RANDFONTEIN CENTRAL.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	151,100	172,475	22 10	21 5	10,838 1 5
August	137,000	164,120	23 9	23 8	2,162 0 4
September	158,000	175,270	22 1	19 7	20,505 2 7
October	140,000	159,455	22 7	22 9	93 —
November	133,000	147,358	22 2	22 11	*5,010 0 9
December	118,200	128,363	21 5	23 9	*11,894 2 0

* Loss.

ROBINSON.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	42,800	49,355	23 0	18 8	8,144 3 10
August	41,300	49,728	24 1	19 2	9,270 4 6
September	36,100	43,119	23 8	20 4	5,255 2 11
October	36,800	40,128	21 10	20 8	1,329 0 9
November	35,000	42,749	24 5	21 7	4,012 2 4
December	36,100	44,248	24 6	21 6	4,467 2 6

ROBINSON DEEP.

1918.	Tons.	Revenue.		Cost.	Profit.
		£	s. d.	s. d.	£ s. d.
July	46,100	63,733	27 8	26 5	1,534 0 8
August	47,000	64,485	27 5	26 6	990 0 5
September	38,200	51,737	27 1	29 5	*4,744 2 6
October	40,200	52,735	26 3	28 9	*5,967 3 0
November	40,500	54,694	26 11	28 0	*3,139 1 7
December	39,400	54,719	27 9	28 0	*1,450 0 9

* Loss.

ROODEPOORT UNITED.

1918.	Tons.	Revenue.		Cost.	Loss.
		£	s. d.	s. d.	£ s. d.
July	22,756	23,567	20 5	22 11	2,379 2 1
August	26,468	24,909	18 6	20 9	2,491 1 11
September	22,000	21,472	18 10	23 3	4,130 3 9
October	21,900	19,421	17 5	24 4	7,241 6 7
November	24,000	22,275	18 6	22 2	3,867 3 3
December	24,000	22,589	17 11	21 1	2,460 2 1

ROSE DEEP.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	55,700	65,993	23 8	17 11	15,241	5 6	
August	54,000	63,128	23 9	18 1	11,031	5 2	
September	48,600	54,205	22 4	18 7	7,993	3 3	
October	49,300	55,072	22 1	19 8	5,374	2 2	
November	46,400	53,823	23 2	19 10	6,779	2 11	
December	44,300	51,487	23 3	20 2	5,663	2 7	

SIMMER AND JACK.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	61,200	671,655	23 5	17 8	14,103	4 7	
August	59,800	65,394	21 10	18 1	10,187	3 5	
September	55,500	64,771	23 1	18 6	10,559	3 10	
October	19,900	56,299	22 7	20 9	3,542	1 5	
November	48,900	55,985	22 11	20 8	4,497	1 10	
December	45,700	49,554	21 7	20 6	5,803	2 6	

(b) Of this, £2,124 carried to reserve.

(c) Of this, £2,761 carried to reserve.

(d) In addition, £4,035 taken from reserve.

SIMMER DEEP.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	43,900	45,999	21 0	21 2	*957	0 5	
August	45,800	47,158	20 7	20 7	*806	0 1	
September	42,100	42,341	20 10	21 3	*2,719	1 4	
October	41,500	46,334	20 10	21 9	*2,869	1 3	
November	42,400	40,460	19 0	22 9	*8,529	1 0	
December	43,100	48,120	22 6	21 8	911	0 5	

* Loss.

SUB NIGEL.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	10,700	26,246	49 1	33 3	7,979	11 11	
August	9,700	28,060	57 10	37 7	9,298	19 2	
September	9,600	28,889	60 2	37 4	9,369	19 6	
October	9,950	24,191	48 8	32 7	7,517	15 1	
November	9,100	26,349	57 11	38 2	8,166	18 7	
December	9,700	25,746	53 1	36 6	7,569	15 7	

(a) Of this, £1,020 carried to reserve.

SPRINGS MINES.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	41,320	86,144	41 8	21 8	10,407	19 7	
August	41,170	87,546	42 6	22 5	10,351	19 7	
September	39,100	86,683	41 1	23 3	10,323	20 8	
October	35,450	73,383	41 5	23 11	31,748	17 11	
November	32,000	72,343	44 6	24 6	32,446	20 3	
December	28,800	68,108	47 4	25 9	30,200	21 0	

TRANSVAAL G.M. ESTATES.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	14,130	23,477	33 2	25 2	5,678	8 0	
August	15,040	23,688	31 6	23 6	5,614	7 6	
September	15,340	26,124	34 1	23 1	8,131	10 7	
October	13,630	25,182	31 10	25 8	8,107	12 4	
November	475	3,075	—	—	*5,212	—	
December	3,550	4,915	27 8	64 1	*6,508	36 8	

* Loss.

VAN RYN.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	32,500	34,513	20 11	17 4	6,031	3 9	
August	32,800	35,498	21 8	17 7	6,579	4 0	
September	33,400	36,258	21 9	17 4	7,046	4 3	
October	33,860	36,153	21 4	17 7	6,147	3 8	
November	32,000	33,816	20 11	17 7	5,544	3 6	
December	32,300	32,550	19 10	17 6	4,063	2 6	

VAN RYN DEEP.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	50,270	101,562	41 7	19 1	56,551	22 6	
August	48,300	105,178	43 7	21 2	54,114	22 5	
September	45,400	97,940	42 6	21 4	49,391	21 9	
October	47,750	98,505	41 3	20 7	49,364	20 8	
November	42,350	94,932	44 10	21 6	49,469	23 4	
December	40,800	94,389	46 3	23 2	47,145	23 1	

VILLAGE DEEP.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	50,000	75,453	30 2	24 9	12,512	5 0	
August	48,800	71,154	29 2	24 9	9,274	3 10	
September	14,200	66,350	30 0	26 11	5,643	2 7	
October	40,900	58,037	28 5	28 1	*671	0 4	
November	38,200	53,050	27 9	30 11	*7,164	3 9	
December	46,800	65,139	27 7	24 2	6,919	2 11	

* Loss.

VILLAGE MAIN REEF.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	22,300	34,717	31 2	22 6	8,905	8 0	
August	21,500	28,851	26 10	23 8	2,840	2 8	
September	20,800	31,573	30 1	22 11	7,054	6 9	
October	21,300	28,804	27 1	21 9	4,995	4 8	
November	19,800	26,548	26 10	22 2	4,029	4 1	
December	17,600	25,877	29 4	25 10	2,508	2 10	

WEST RAND CONSOLIDATED.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	31,000	36,314	23 4	21 10	2,440	1 7	
August	32,150	36,781	22 3	19 11	2,034	1 3	
September	29,080	34,746	23 9	23 2	795	0 7	
October	27,150	31,225	22 9	24 7	*2,252	1 8	
November	25,000	26,994	21 6	25 9	*5,162	1 2	
December	28,400	32,117	22 6	23 6	*1,395	1 0	

WITWATERSRAND.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	36,300	41,398	22 10	18 10	7,234	4 0	
August	36,350	41,224	22 8	19 8	5,551	3 1	
September	35,000	40,052	22 11	19 9	5,521	3 2	
October	34,000	37,715	22 2	20 0	3,711	2 2	
November	31,005	35,851	22 9	20 10	3,492	2 3	
December	33,321	37,851	22 6	20 3	4,086	2 5	

WITWATERSRAND DEEP.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	32,340	40,345	24 11	24 2	1,511	0 11	
August	33,130	38,650	23 1	22 1	517	0 4	
September	29,000	36,429	25 1	24 4	352	0 3	
October	28,730	35,107	24 5	25 9	*2,593	1 10	
November	28,120	31,454	22 2	26 4	*6,237	4 5	
December	26,400	32,644	24 4	26 2	*2,577	1 11	

* Loss.

WOLHUTER.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
July	34,100	40,651	23 10	19 5	6,982	4 1	
August	33,450	38,990	23 1	20 3	4,422	2 8	
September	32,150	38,752	24 1	20 10	5,031	3 2	
October	31,550	35,830	22 9	20 1	3,459	2 2	
November	29,270	35,124	24 0	20 7	4,319	2 11	
December	27,300	37,308	27 4	22 11	5,278	3 10	

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Speculation in Oil—The Building Trades—Damper on Timber Trade—Future of Machinery—Central Buying Office—Oils and Colours—Harness and Saddlery.

THE mining material business is a little better between merchant and merchant as free buying is taking place in Johannesburg for the purpose of fulfilling current contracts. In this respect some contractors are buying a little ahead from speculators and other holders who have to sell through financial pressure. Take the case of a speculator who had 350 cases of linseed oil, costing him 12s. 8d. a gallon, and he offered it at 10s., but as the cases were leaking like a sieve he was eventually glad to take 8s. Similar instances are coming to light every week, where speculators who have ventured outside their legitimate business are cutting losses, some of which are of rather serious magnitude, especially in the glue speculations. It is recognised that when the overplus of speculative stocks have been absorbed, the markets will steady and even improve in values. What is happening in soft goods, drapery and the boot trades, is that retail prices have come down, in many cases smartly, but the wholesalers with financial strength have not reduced prices, but rather are marking time until some of the commercial clouds roll by.

THE BUILDING TRADES.

The strike of the building employees, which include carpenters and joiners, bricklayers, and the building workers' industrial union, the plasterers, masons, and the building electricians, according to the parade that took place on Thursday, have not at present been taken too seriously, as negotiations are still in progress and optimistic hopes are entertained that the differences will soon be arranged by a compromise. In any case strikes are disconcerting, with a tendency to throw things out of gear, but so far as the town is concerned it could not have happened at a better time, because December is usually a dull month and in this case it was extra dull because of the armistice, and everybody anticipating cheaper material. We also ran through January much on the same lines, therefore very little pressing work was in progress, excepting Government schools. Naturally it has put a damper upon the timber yards, but it is surprising what a large number of small orders are in evidence, with the excuse that owners are doing a little work themselves, with the assistance of rough carpenters and coloured people. There is also a fair demand from the country, as farmers are better off than usual and are buying more liberally. Deals are 1s. 8½d. to 1s. 9½d.; flooring, 9½d. to 10d.; ceiling, 6½d. to 6½d. Beaver board and its substitutes, 5½d. Doors, window frames and other joinery work are generally lower, but not much, say five per cent. or thereabouts. Galvanised roofing iron is 1s. 7½d. to 1s. 8½d. per foot for 24 gauge, according to length. The figure of eighteenpence is also mentioned, but this is for short lengths and only available at a few yards. The price of 26 gauge is 1s. 4d. all round. Flat galvanised iron has had the most sensational drop, as it is 70s. per 100 lbs., and for big lots a fraction less, whereas some six months ago it was 140s. for a short time. The price of bricks is 50s. to 60s. for best stock and 80s. per thousand for wire cuts and also pressed bricks. There are practically no orders available, therefore when the strike is over there will be no waiting for bricks. The tile yards may pull up some of their old orders, but in any case this is an increasing industry as fashion is dictating tiled roofs in the best suburbs. The best second-hand deals are ruling at 1s. 3d. to 1s. 4d. and sound roofing iron at 1s. 2d. There was a good demand last week, but it fell off on the announcement of the strike, although business is still quite fair from the farmers.

THE FUTURE OF MACHINERY.

The new jackhammer drills are coming into use more and more. It is said that when a native becomes expert with this drill one can do as much as four with the ordinary

hammer drills. Be that as it may the subject of machinery and new inventions for breaking rock is of paramount importance to these fields, especially for the lower-grade mines, and even the richer ones. For instance, take the case of that extraordinary rich area extending over a mile straight away on the Government Areas, showing 17.2 dwts. over a width of 41 inches, yet much has to be classed as unpayable at 3.6 dwts. Mining engineering talent throughout the world does not seem to have done over much in reducing the charges for breaking rock, therefore a timely hint is not out of place in calling attention to this field of inventiveness. In pre-war days prizes were given for new drills and improvements, and it is to be hoped something of the kind will be done in the future. Whether we shall get better and cheaper explosives through the experiences of the great war remains to be seen, but undoubtedly some assistance will come from that direction. As regards machinery, undoubtedly when motor petrol comes down to normal, and even less, in price it will give a great impetus to agriculture in motor ploughing, more especially in this country, where speed and quickness are of consequence in taking advantage of the rains. And again the electrical improvement in farming matters is a feature in itself, especially as we have the Victoria Falls Power Company's immense voltages running more or less throughout the Rand, and during the war period much experimenting has taken place in Britain in assisting the growing of foodstuffs by electricity.

TAKE NO CHANCES

Where it's a Difficult Drive.

Fit a belt you know will do
the work, and that must be a
"TULLIS BELT."

"Chonata" BRAND Balata.
(Driving and Conveying)

"St. Ann's" BRAND Leather.

"Swan" BRAND Waterproof.
(Single, Double and Triple)

"Homogene" BRAND Laminated.

"Viking" BRAND Launder Lining.

THE CENTRAL BUYING OFFICES.

There is a little hurry on, as the offices will be moved on February 15th from the General Mining building to rooms 68, 69 and 70, the sixth floor, National Bank buildings, Simmonds Street. By the end of this month all allotments will be made to the merchants who have quantities under orders, to come from America and Britain, for the various mines. Some of these orders have not yet been made and others are in the course of manufacturing, but obviously the fiat has gone forth that a red line be drawn as soon as possible on the doings of the Chief Buying Office. The heavy commitments yet to arrive are chiefly carbide, wire ropes, and bar iron and steel, as well as steel plates. Subsequent to the visit to the chief office, one who should know remarked that the mines were caught with vast quantities of stores at the time of the armistice, as the powers that be thought we were then in for another twelve months of the war period.

OILS, COLOURS AND WHITE LEAD.

White lead is 1s. 1b. down to 10½d. for speculative lots or keen cut between merchant and merchant, which is less than it can be landed at ex London, according to last cable quotations. Turpentine is cheaper here than in New York on account of our congested market, also linseed oil is in a similar position in the Argentine. There is a parcel of 1,600 cases in the hands of one broker to dispose of, but offers are few and far between owing to the overhanging cloud of arrivals from America and India. There is nothing solid about prices; for example, if one has an offer to-day of 50s. for anything, to-morrow it is very problematical if the offer is repeated at 40s., as merchants are not buying anything for stock purposes. The White Leads Company, Ltd., held a meeting when liquidation was proposed, but as a large shareholder advanced a certain amount of money the immediate difficulties are tided over, as high hopes are entertained that the manufacture of South African white lead may yet eventuate successfully. The ill effects of the builders' strike has hardly been felt yet in the oil and colour business.

IRON, STEEL AND METALS.

The price of lead in England jumped from £29 per ton, the Government controlled price, to £40 for the free market. Some purchases of lead for Johannesburg have been made in Rhodesia and our own scrap keeps the local market going for the present. Round nose shovels are 80s. merchant to merchant and 85s. per dozen in the open market. Speculators chiefly are cutting losses in piping, owing to the excessive quantities coming from America and so flooding the market. Galvanised wire is 42s. 6d. to 45s. 100 lbs. instead of 55s., as a lot has come into the market suddenly from overseas. Imported bar iron is said to be lower through increased arrivals at the coast. Our prices of bar iron and mild steel for the smaller sizes keep quite steady.

ELECTRICAL GOODS.

According to a broker, electrical material is in good demand, as six weeks ago he was selling key switch holders at 16s. 6d. and now 21s. 6d. A merchant partially agrees with this, as stocks are getting less well assorted, therefore in some lines competition exists and prices advance accordingly. Stocks are still trickling in from America, England and Japan, but buyers are holding off, as contractors are not expecting house wiring whilst the builders are on strike, and the same old tale of waiting for lower prices is still much in evidence. In this connection it must be borne in mind that we cannot expect electrical lamps and material from Central Europe for several years to come.

SADDLERY, HARNESS AND LEATHER.

The price of S.A. harness sides is 3s. 9d. 1b. and backs 4s. Australian, 3d. 1b. higher, but the quotations already cabled for are expected to be 6d. higher than the S.A. kind. British leather, for which there is no local price available, is expected to be 6d. 1b. higher when the Government lifts

its control. The firm supplying this information says that they have had no English harness leather for the past three years, as it has been out of their reach as regards price. Business for Cape harness and Boer saddles has been quite good for the country districts, also the demand from Johannesburg cartage contractors has been quite fair. In December, after the armistice, the country storekeepers would not purchase anything, but now they are buying more oddments, such as ox reims, trek chains, bridles, halters, and in a lesser degree sets of harness. Harness furniture is still scarce, but a little more is coming in from England, which is encouraging to the workmen, as occasions have arisen when they have been put on short time awaiting the furniture or harness trappings.

Later.—A responsible architect says that if the builders and employees will only fix up their differences there will be a building boom. In the meantime, a large number of jobs are pigeon-holed awaiting an opportune moment to ask for tenders.

In a paper read recently before the Institution of Petroleum Technologists in London on the motor fuel problem, Dr. W. Ormandy said that if attempts were to be made to utilise alcohol in admixture with other fuels a large amount of research work would have to be done. It had been proved that alcohol was entirely satisfactory for specially designed engines and experiments went far to prove that the modern petrol engine would work quite well on alcohol-benzole mixtures; but the best limits within which such mixtures could be employed still remained to be found out. There were problems relating to the viscosity of alcohol-benzole, alcohol-ether, and alcohol-benzole-ether mixtures, which awaited investigation. The vapour tension of admixtures of various fuels was not by any means the mean of the various ingredients of the mixture. They had to find out what percentage of water could best be retained in the alcohol. Although alcohol and benzole were miscible in any proportion, that was not true if the alcohol contained more than a certain quantity of water, and the equilibrium not only of alcohol-water-benzole mixtures had to be investigated, but the possible influence of paraffin compounds and any other fuel which might have to be eventually added to the mixture.

The South African Rubber Manufacturing Co., Ltd.

Manufacturers of Mechanical Rubber Goods of every description in Soft, Medium and Hard Rubber.

Vacuum Brake and Coach Gear for Railways, Municipal and Sugar Mill Fittings and Mine Fittings.

On and from January 1st, 1919, all Sales will be effected by Messrs. Reunert and Lenz, Ltd., as Sole Selling Agents for the South African Rubber Manufacturing Co., Ltd. All enquiries regarding prices and details as to quality, etc., should be addressed to

Messrs. REUNERT & LENZ, LTD.,
CONSOLIDATED BUILDINGS, JOHANNESBURG.

THE WEEK IN THE SHAREMARKET.

Advances in Government Areas and City Deeps—A Flutter in Crown Diamonds.

The market after closing steady on Friday was again weaker on Saturday morning. Alkalis have only kept their recent advance for a short time. The feature at Monday's opening was Crown Diamonds (the old Laces), which have been looking up for the past few days, with an opening sale at 11s.; they rose to 14s., closing at 13s. buyers. At the call the first deal was at 13s. 6d. and the next 1s. lower. Prices on the whole were firm with advances in Government Areas and Modders, the weakest display being made by New Kleinfonteins and Consolidated Main Reefs. Later on Crown Diamonds fell to 11s. 6d. Tuesday started well with sales of Gedulds at 42s. 6d. to 43s. 3d.; Springs, 64s.; Government Areas, 95s. and 95s. 3d. All prices at the call showed advances in the better class stocks, with the exception of Modder East and African Farms, the latter being decidedly out of favour at present. At Wednesday's call prices were fully maintained with a substantial advance of 2s. 6d. in City Deeps. In the small stocks Wit. Deeps did best. The weak spot was found in Rose Deeps, with a seller at 16s. and no buying offer. Before lunch Hume Pipes rose to 29s. 6d.; Government Areas to 96s. 3d.; and City Deeps to 53s. 9d. The market was quiet but steady on Thursday morning with an improvement in Government Areas and New Eland Diamonds. East Rands and their debentures are also in better demand. Very little support is being given and the business appears to be mainly Colonial and professional.

The market was again dull on Friday morning, with a lower tendency, as indicated by the following changes in prices:—Sales: Apex, 6s. 9d.; Crown Diamonds, 12s.; Daggafontein Options, 6s.; East Rands, 6s. 9d.; Geduld Props., 45s. 6d.; Options, 13s. 9d.; Government Areas, 96s. 6d. and 96s. 3d.; Hume Pipes, 28s. 6d.; Knight Centrals, 5s. 9d.; Modder East four-year Options, 5s. and 5s. 1d.; New Elands, 24s. 9d.; New Geduld Deeps, 5s. 11d.; Kleinfonteins, 11s. 7½d.; Springs, 64s. 6d.; Van Ryn Deeps, 67s. 9d.; Zaaipplaats, 13s. 6d. and 13s. 5d. Buyers and sellers: West Springs, 24s. and 24s. 3d.; Options, 9s. 3d. and 10s.; National Banks, £14 15s. and £15; New Jagersfonteins, 90s., buyer; East Rand Debentures, 70s., buyer.

	Fri., 31st	Sat., 1st	Mon., 3rd	Tues., 4th	Wed., 5th	Thurs., 6th
African Farms . . .	14 9	14 6*	—	14 6	14 6	14 7*
Anglo-Amer. Corp. .	—	—	—	32 6†	—	—
Apex Mines	6 6*	6 6*	6 6*	6 9	7 0†	6 9*
Bantjes Cons. . . .	2 3†	2 0*	2 0*	2 0*	2 0*	2 2†
Brakpan Mines . . .	70 0†	70 0†	70 0†	70 0†	68 6†	68 0†
Breyten Colls. . . .	11 9*	11 9*	11 9*	11 9*	11 9*	11 9*
Brick and Potter. . .	—	5 6	—	—	—	—
British South Africa	22 6†	20 0*	20 0*	20 0*	—	22 0†
Bushveld Tins . . .	0 8*	0 8*	0 8*	0 8*	0 9*	0 8*
Cassell Coals	—	—	35 0†	35 0†	35 0†	28 0*
Cinderella Cons. . .	5 0†	3 3*	5 0†	5 0†	5 0†	5 0†
City and Subs. . . .	7 9*	8 0*	8 0*	8 0*	7 9*	7 9*
City Deeps	48 9*	51 6†	18 0*	50 6	53 6	53 0*
Clydesdale Colls. . .	22 6*	—	20 0*	22 6*	22 6*	23 6*
Con. Investments . .	22 6*	—	22 6*	22 6*	—	22 6*
Con. Langlaagtes . .	18 3*	18 3	18 0*	18 3	17 6*	17 0*
Con. Main Reefs . .	11 0	11 0†	10 6	10 6	10 6	10 6*
Con. Mines Selection	25 6*	—	—	21 9*	25 0*	25 0*
Coronation Frees. . .	1 2*	1 2	1 3*	—	—	1 3*
Coronation Synd. . .	—	—	—	—	—	2 0*
Crown Dias.	8 0	8 3	12 6	11 6	11 9	11 9*
Crown Mines	—	—	—	—	—	47 6*
Daggafontein Mines .	26 3	26 0*	—	25 6*	25 3*	25 0*
Do. Options	6 6	6 0*	—	—	6 0	5 9*
East Rand Coals . . .	2 2	2 2*	2 2	2 3	2 2*	2 4
East Rand Deeps . .	1 0*	1 0*	1 0*	1 0*	1 0*	1 0
E.R. Minings	18 0*	19 0†	18 0*	19 0†	17 6*	—
East Rand Props. . .	5 6*	5 9*	5 6*	6 3	6 6*	6 8*
East Rand Debs. . . .	£66*	£66*	£66*	£66*	£66*	£69*
Eastern Golds	1 3*	1 4*	1 4*	1 3*	1 4	1 3*
Rank Smith Dias. . .	3 3	3 0*	3 0*	3 5	3 3*	3 6
Geduld Props.	42 0	41 6	42 3*	44 0	44 6	41 6
Glencoe Colls. . . .	—	7 9†	6 0*	6 0*	7 9†	6 0*
Glynn's Lydenburgs .	26 3†	24 0*	26 0†	25 6†	24 9†	23 0*
Govt. Areas	93 9*	93 9	94 3	95 6	95 6*	96 9
Hume Pipes	27 6*	27 6*	28 0*	28 0*	29 0A	29 0*

*Buyers. †Sellers. A Odd lots. B Ex London.

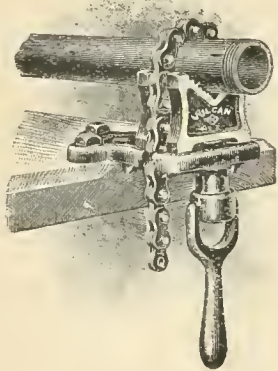
	Fri., 31st	Sat., 1st	Mon., 3rd	Tues., 4th	Wed., 5th	Thurs., 6th
Jhb. Bd. of Execut. .	30 0*	30 0*	—	30 0*	30 0*	30 0*
Jupiters	—	—	4 9†	—	—	4 9*
Klerksdorp Props. .	3 0*	3 0*	3 0*	3 0*	—	3 0*
Knight Centrals . .	5 2*	5 2	5 1*	5 2*	5 2*	5 3
Knights Deeps . . .	—	—	—	—	—	6 1*
Lace Props.	20 0	19 6*	20 3	20 3	20 3*	20 6*
Leeuwpoot Tins . .	23 0*	23 0*	23 6*	23 6*	24 0	24 0*
Lydenburg Farms . .	8 8	8 7*	8 8	8 7*	8 9	8 10*
Middelvlei Est. . . .	1 0*	1 0*	1 0*	1 0*	—	1 0*
Modder B.'s	153 0	155 0A	155 6*	156 6	156 0	156 0†
Modder Deep	143 6*	144 0	143 0*	145 6	145 0*	145 6*
Modder Easts	18 7½	18 6	19 0A	18 4½	18 4½	18 4½
Do. Options (3yrs.) .	4 3*	4 3*	4 3*	4 4*	4 1*	4 0*
Do. Options (4yrs.) .	5 9	5 6	5 6*	5 9*	5 6	5 6
Natal Naviga. Col. .	21 0*	—	21 0*	21 6	—	—
National Banks . . .	£14½*	£15†	£14½†	£14½*	£15†	£14½*
New Boksburgs . . .	1 0*	1 1*	—	1 1*	1 1*	1 0*
New Eland Dias. . .	22 0*	22 0*	21 6*	22 3*	23 3*	24 3*
New Era Cons. . . .	9 6*	10 0†	9 6*	9 6*	9 9*	9 7*
New Geduld Deeps . .	5 8*	5 9*	5 8*	5 8*	—	5 9*
New Heriots	—	13 0*	12 6*	12 9*	12 9*	12 6*
New Kleinfonteins .	11 3*	11 6½	10 9	10 9*	11 0*	11 6*
New Modders	£26*	£26½	£26*	£26*	£26½	£26*
Nigels	4 0*	—	4 0*	4 0*	4 0*	4 0*
Nourse Mines	—	—	16 0†	16 0†	16 0†	16 0†
Premier Def.	—	—	—	—	—	131 3*
Premier Pref.	160 0†	—	—	160 0†	—	160 0†
Pretoria Cements . .	67 0*	66 3*	65 0*	67 6†	65 6*	67 0*
Princess Estates . .	2 10*	2 10*	—	3 0*	3 1	3 0*
Rand Colls.	3 3*	—	3 3*	3 6*	3 6*	3 6*
Rand Mines	—	—	—	—	—	52 6*
Rand Nucleus	1 10*	2 0†	1 8*	1 8*	1 7*	1 8*
Rand Select Corp. . .	80 0*	—	80 0*	81 0A	84 0†	84 0†
Randfontein Deeps . .	4 10*	4 9*	4 9*	4 9*	4 9*	4 10*
Randfontein Est. . .	14 0*	13 9*	—	13 6*	14 3	14 6*
Rooibergs	6 3	6 6†	6 0*	6 0*	6 6†	6 6†
Roodepoort U.	—	3 0†	—	—	3 0†	3 0†
Rose Deeps	19 0†	—	—	18 6†	16 0†	—
Ryan Nigels	3 0*	3 3*	3 3*	3 4*	3 4*	3 3*
Shebas	—	1 6*	1 6*	1 6*	1 6*	1 6*
Simmer and Jacks . .	6 0†	6 0†	6 0†	6 0†	5 8†	—
Simmer Deeps	—	2 6†	—	2 3†	—	—
S.A. Breweries	32 6*	32 6A	32 6*	33 0*	33 6*	33 0*
S.A. Lands	5 11	5 9*	5 9*	5 10*	5 11	5 11
Springs Mines	64 3	64 0	64 0	64 3*	64 6*	64 6*
Sub Nigels	25 0	24 6*	24 6*	25 0	25 0*	25 0*
S. Van Ryns	12 0*	12 0	12 3	12 1*	12 0*	12 0*
S.A. Alkali	40 0	39 0A	35 0*	35 0*	37 6†	35 0*
Transvaal Lands . . .	25 3†	24 0*	25 0†	24 0*	24 0*	25 3†
Trans. G.M. Est. . . .	13 6*	13 6*	14 6†	13 9*	14 6	14 6*
Tweefontein Col. . .	24 0*	—	22 6*	22 6*	22 6*	—
Tweefontein Pref. . .	22 9*	22 9*	—	—	22 6*	—
Union 5 per cent. . .	£103	£103†	£102½*	£102½*	£103	£102½*
Van Ryn Deeps	67 3*	67 9	67 3*	67 9	68 0	67 6*
Village Deeps	16 0*	16 3	16 0*	16 6*	16 3*	16 6
Witbank Colls. . . .	56 0*	56 0*	56 0*	56 0*	58 0*	—
Witwatersrands . . .	20 0†	—	—	18 0*	18 0*	18 3*
Wit. Deeps	9 0*	9 3	9 0*	9 3*	10 6*	10 6*
Wit. Townships . . .	27 6†	27 6†	—	27 6†	27 0†	27 0†
Wolhuters	3 3*	3 0*	3 3*	3 3*	3 3*	3 3*
Zaaipplaats Tins . . .	—	13 9B	13 6*	13 3*	13 3*	13 9
New States	22 9	22 6	22 3	22 3	22 3	22 3*
West Springs	24 3	23 9*	23 9	24 0*	24 0	23 9*
Do. Options	10 3†	10 0†	10 0†	10 0†	9 0*	9 0*
New Jagers	—	—	85 0*	—	—	—

A Hint for South Africa.

A Bill requiring all goods to be marked clearly with the name of the country of origin has been passed by the Australian House of Assembly, which prevents German goods, after passing the Customs, from being labelled "Made in Australia."

Cable Codes and Overseas Trade.

A communication from the Army Council to the Comptroller-General, Department of Overseas Trade, states that it is not possible to relax the restrictions relating to the use of telegraphic codes without the concurrence of the principal Allied Powers who have co-operated in the censorship during the war. The Army Council recognise the importance to the commercial community of allowing greater latitude in the use of cable codes, and the question of relaxation is now being discussed with the various Allied authorities.



WILLIAMS' "VULCAN" CHAIN PIPE VISE

MADE ENTIRELY OF DROP FORGED AND WROUGHT STEEL.

3 sizes accommodating all pipe from $\frac{1}{8}$ to 8" diameter.
Compact, quickly adjusted and easily attached to
table, bench or post.

ASK FOR CATALOGUE—IT'S FREE.

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Export Office :
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Brooklyn, N.Y.

Electric Welding Arrives.

The British Government has invited the Institution of Electrical Engineers to put forward suggestions for ensuring the safety of operators engaged in electric welding. This circumstance, combined with the approval of Lloyds of electric welding for ship's hulls under certain conditions, is a proof that this process of jointing steel will prove a formidable rival of riveting. Hitherto no general regulations have covered electric welding, and the firms engaged in it have adopted their own method, which seems to have been fairly successful in protecting the operator himself from material hurt. The main difficulty is apparently to safeguard other workmen who, especially in the open conditions of the shipyard work, will persist in watching the operators.

The ultra-violet rays from the welding arc have an injurious action on the eye, and the infra-red rays burn the skin. Sir William Crookes has invented a glass which protects the eye against both types of radiations; and if its use is made compulsory, together with efficient screening against on-lookers, it appears likely that electric welding will become as safe as riveting. It is also admirably adapted to building up the framework of reinforced concrete vessels. Both in Great Britain and in America State research committees are busy perfecting the details of the process. A big fight is likely to be made by the vested interests (Labour and otherwise) concerned in riveting, but electrical engineers are confident that welding will triumph both in the construction of hulls and in the making and repairing of tanks, ventilators and other portions of ship equipment.

TRIMO TOOLS.

BE sure to ask for the Trimo Wrenches, both Pipe and Monkey. They are equipped with Nut Guards that prevent the accidental turning of the adjusting nut in close quarters, and with Steel Frames in all sizes that will not break.

TRIMONT MFG. CO.,
Roxbury, Mass., U.S.A.

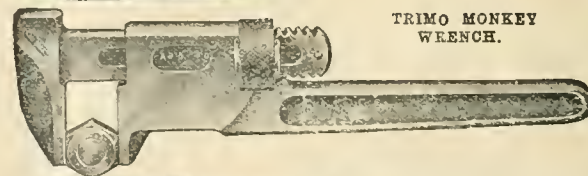
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TRIMO PIPE WRENCH
STEEL HANDLE.



TRIMO PIPE CUTTER.



TRIMO MONKEY
WRENCH.



TRIMO CHAIN WRENCHES

WITH FLAT-LINK OR CABLE CHAIN

Insert jaw in handle—an economy feature.

SOLE AGENT FOR SOUTH AFRICA :

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P.O. BOX 5580.

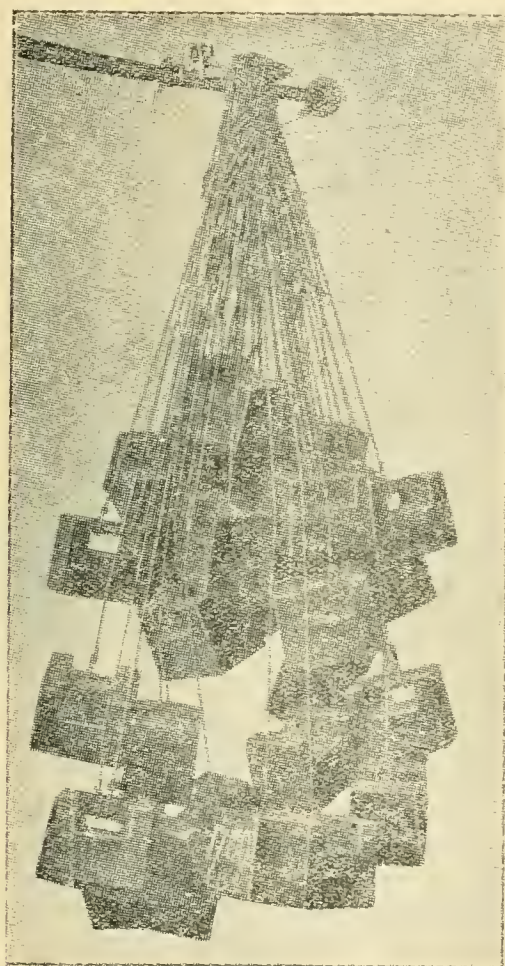
President Buildings, c/o President
and Von Brandis Sts., Johannesburg.

PHONE 2296.

Engineering Notes and News.

A SEVERE TEST.

The super-grip and the built-in strength of the Genuine Stillson wrench are well demonstrated by the test illustrated on this page. The test was made on a 14-inch wood handle Genuine Stillson wrench, from which weights to the extent of 1,700 lbs. were suspended, and the fact that the wrench tested suffered not the slightest break or distortion in any way proves conclusively that there is something more than ordinary quality in the build of the Genuine Stillson. This, however, is not surprising when one remembers that the makers have experience of more than forty years at the back of them. An even better idea of the severe nature of



the test given can be gathered by realising that the strain given on this wrench was just ten times greater than a 170 lb. man could exert if he were putting his entire weight on it. Several manufacturers are said to be now marketing makes of wrenches under the name of Stillson, and it may be well for the interested reader to note, therefore, that the wrench illustrated is the Genuine Stillson. Stocks of these Genuine Stillsons and also stocks of replacement parts are, we understand, being carried by the sole South African agents, Bartle & Company, Ltd., of Loveday House, Johannesburg.

Tenders Open.

Tenders are invited for the supply, delivery and erection of a complete installation of alternating current switchgear and control apparatus for the New Control House, Dock Road Power Station, Capetown. Specifications and draw-

ings may be obtained upon application at the Electricity Department, Dock Road, on payment of a fee of three guineas, which will be returned on receipt of *bona fide* tender. Tenders under seal and endorsed "Tender for alternating current switchgear and control apparatus, etc.," must be deposited in the Tender Box, not later than 12 o'clock noon, on Monday, the 30th June, 1919.

The Municipal Council of Johannesburg invite tenders for: (a) Contract 468: Sanitary pails and lids. (b) Contract 469: Motor cycle and side-car. (c) Contract 470: Brake blocks. (d) Contract 471: Soap. (e) Contract 472: Sails. (f) Contract 473: Bicycles. (g) Contract 474: Refilling machine broom stocks. (h) Contract 475: Anti-friction grease. (i) Contract 476: Fluid disinfectant. (j) Contract 477: Axles and bushes. (k) Contract 478: Petrol motor pumps. Sealed tenders, marked with the contract number and addressed to the Town Clerk, must be placed in the Tender Box, First Floor, Municipal Offices, not later than noon on Thursday, 20th February, 1919, in respect of (b), (c), (d), (e), (f), (g), (h); not later than noon on Tuesday, 13th May, 1919, in respect of (a), (i) and (j); and not later than noon on Thursday, 29th May, 1919, in respect of (k).

TWENTY-FIVE YEARS AGO.

FROM THE "SOUTH AFRICAN MINING JOURNAL"
OF FEBRUARY 10th, 1894.

The weekly meeting of the Chamber of Mines Executive is mainly devoted to an unnecessary and unprofitable discussion upon the subject of dynamite.

"Practically no fresh information was elicited, and until the arrival of Nobel's representative we do not see that any good can result from further discussion, feeling sure that the duty of safeguarding the interests of the community may safely be left in the hands of the Dynamite Committee."

* * * *

Contrary to the anticipations we expressed some weeks ago, it is now practically certain that the output for January, which will be officially declared to-day, will considerably exceed that for last month. The increase may be expected to amount to some 3,000 ozs., bringing the total to approximately 149,000 ozs.

* * * *

Geldenhuys's Deep.—"In Shaft Number 1, which has now been turned off on the incline, 10 feet were sunk during January."

* * * *

Robinson.—The Riedler electric mine pumps, supplied by Messrs. Edward Chester and Co., have now been started and are working very smoothly. As these pumps are the first electric ones for mine work on these fields, we shall give a detailed account of them in a subsequent issue.

* * * *

The Gipsy's new cyanide works, capable of treating 15,000 tons, are now in full working order.

* * * *

Jubilee G.M. Co.'s annual meeting was held in Maritzburg January 31st. Dividends for the year 120 per cent.

* * * *

The market for gold shares has been remarkably steady. No dealings in Modderfonteins recorded. Simmer and Jacks, £4 buyers.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

The Employment Question.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of January:—

Company	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
Bantjes Cons. ...	90	3	3,050	1,033	£1,004	21/11.1
City Deep ...	A154	10	45,500	21,521	24,887	28/10.6
Cons. Main Reef	220	6	44,310	16,095	6,551	27/7.1
Crown Mines ...	660	26	140,000	48,287	18,380	26/3.8
Dur. Rood. Dp..	100	3	23,200	8,218	*531	30/3.2
East Rand Prop.	440	19	115,000	34,470	12,606	22/11.5
Ferreira Deep ...	280	7	37,240	14,601	14,917	24/9.7
Geldenhuis Deep	300	7	47,400	13,176	*949	23/11.5
Knight Central ..	120	3	17,900	6,445	986	29/4.5
Modder B. ...	B104	8	58,000	30,076	65,026	21/7.1
New Modder ...	c236	15	76,000	40,064	91,274	20/3.3
Nourse Mines ...	180	5	35,000	11,794	561	27/11.5
Robinson ...	180	6	38,500	10,698	4,779	21/0.3
Rose Reep ...	300	7	48,000	12,934	7,816	19/6.2
Village Main R.	130	4	18,200	6,057	3,648	24/0.5
Wolluter ...	120	4	29,250	8,426	4,345	21/5.2
Village Deep ...	180	7	48,200	15,511	4,262	25/4.8
Wit. Deep ...	200	5	27,580	8,429	*1,958	27/6.8

Tls. & averages 3994 145 852,330 307,405 257,634 24/4.6

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.

c. Includes 56 Nissen stamps.

* Loss.

Bantjes Consolidated Mines, Ltd.—Treatment of underground and surface accumulations completed last month. Final clean-up of reduction works still to be made, result of which will be advised in March quarterly report.

Durban Roodepoort Deep, Ltd.—Reduced tonnage milled caused by stoppage of hoisting No. 1 shaft for four days owing to accident in shaft and repairs, also to labour shortage at beginning of month. Labour position materially improved towards end of month. Costs abnormally high owing to low tonnage milled.

General Note.—Native labour position generally has improved, but City Deep, Crown Mines, East Rand Proprietary Mines, and Village Main continue to show a reduction in numbers employed. In valuation gold recovered in January the realisation charges are reduced by 16s. 3d. per cent. due to decrease in freight and insurance charges.

Union Corporation.

Results of operations on the producing mines of this group for the month of January:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	42,900	£64,024	29/10
Modder Deep Levels ...	70	44,400	88,650	39/11
Princess Estate ...	60	18,000	20,637	22/11

Totals ... 230 105,300 173,311 —

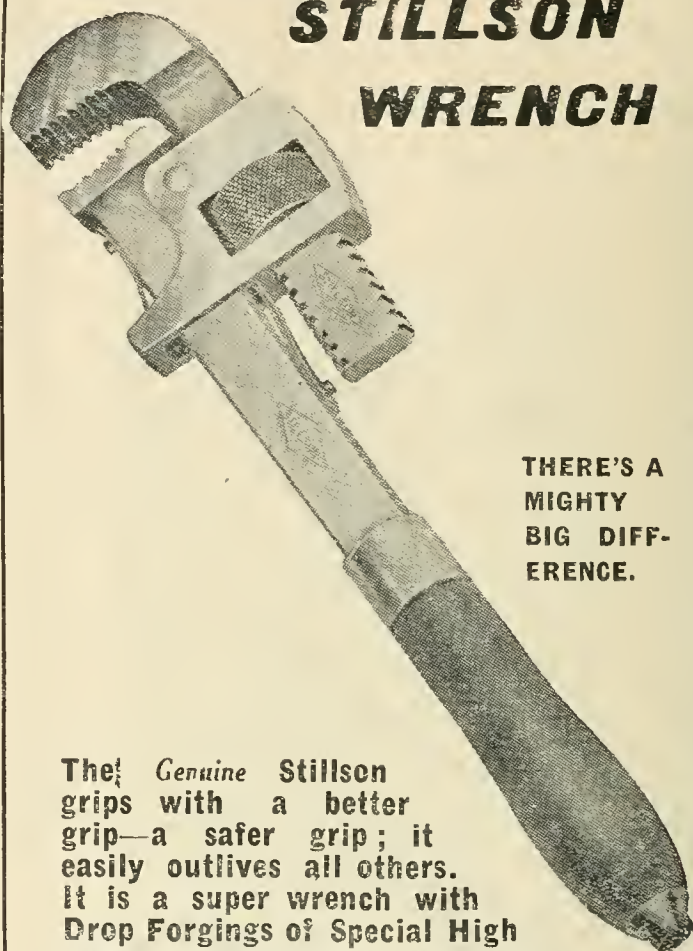
Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£42,823	19/11	£21,201	9/11
Modder Deep Levels ...	37,576	16/11	51,074	23/0
Princess Estate ...	26,516	29/5	*5,879	6/6

Totals ... £106,915 — £66,396 —

* Loss.

Note.—During the last few days of the month the native labour supply of the Princess Estate has improved substantially, the effect of which should soon be felt.

THIS IS THE GENUINE STILLSON WRENCH



THERE'S A
MIGHTY
BIG DIFF-
ERENCE.

The! Genuine Stillson grips with a better grip—a safer grip; it easily outlives all others. It is a super wrench with Drop Forgings of Special High Grade Tool Steel and Forgings which are heat treated to add greater strength and toughness. It has four parts only (Jaw, Handle, Extra Heavy Malleable Frame and Nut) each part machined to gauge, and each interchangeable. Its makers have more than 40 years' experience of wrench-making behind them.

Big Stocks of Genuine Stillsons in all sizes, and of Genuine Stillson replacement parts, also of Clyburn Spanners and other hand tools are now on hand at

Bartles

LOVEDAY HOUSE. 'PHONE 3553. WIRES "FAGGOT."
BOX 2466—JOHANNESBURG.

Latest Company Registrations.

The list of new companies registered in November, 1918, is as follows:—

- The Polar Star Creamery, Ltd., Muhle, eastern portion of Welverdiend No. 77, District Piet Retief; capital £6,500.
- Jacobson's, Ltd., 45 and 46 Portland House, Commissioner Street, Johannesburg; capital £15,000.
- South African Chrome Industries, Ltd., Lewis & Marks' Buildings, 65 President Street, Johannesburg; capital £10,000.
- Ebrahim & Omar Rajan, Ltd., Church Street, Zeerust; capital £1,000.
- The Nubo Modelling Company, Ltd., 277 Commissioner Street, City and Suburban, Johannesburg; capital £3,000.
- Kilgour & Company, Ltd., 66 Von Weilligh Street, Johannesburg; capital £10,000.
- E. P. W. Green, Ltd., 39 President Street, Johannesburg; capital £4,000.
- Henry S. Potter, Ltd., 26 Cullinan Buildings, Fox Street, Johannesburg; capital £15,000.
- The Curlews Citrus Farms, Ltd., 11, 12 and 33 Steytler's Buildings, corner Market and Loveday Streets, Johannesburg; capital £15,500.
- Wicker Works, Ltd., Room No. 12, Saltman's Buildings, Main Road, Fordsburg; capital £500.
- Reg. Clarke, Ltd., 57 Mosely Buildings, President Street, Johannesburg; capital £1,200.
- Lutchman & Son, Ltd., corner Marshall, Kerk and Joubert Streets, Pietersburg; capital £200.
- J. W. Holmden & Co., Ltd., 164 New Stock Exchange Buildings, Holland Street, Johannesburg; capital £2,000.
- Pretoria Lokale Industriële Maatschappij, Beperkt, 24 Bureau Street, Pretoria; capital £1,500.
- Dolls, Ltd., 201 Commissioner Street, Johannesburg; capital £3,000.
- Sunn's Pharmacy, Ltd., corner Commissioner and End Streets, Johannesburg; capital £1,500.
- The Eagle and Globe Steel Company, Ltd., care of R. B. Langdon, 60/63 National Bank Buildings, Simmonds Street, Johannesburg; capital £10,000.
- The Neptune Salt Company, Ltd., care of Philip Morris, National Mutual Buildings, Rissik Street, Johannesburg; capital £5,000.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

- Economic Coal and Produce Company, Ltd., Johannesburg; increase of capital.
- Sivo Bros. & Karnovsky, Ltd., Johannesburg; increase of capital.
- George Smith & Company, Ltd., Johannesburg; alteration of articles.
- Rand Klip, Ltd., Johannesburg; liquidation.
- Cape Wine Bodegas Company, Ltd., Johannesburg; alteration of articles.
- Chisholm Stevenson & Co., Ltd., Johannesburg; alteration of articles.
- Co-operative Association of S.A. (Boksburg and District), Ltd.; sale of assets.
- The Hellenic Community of Johannesburg, Johannesburg; increase of capital.
- Broom, Ltd., Johannesburg; liquidation.
- Thienhaus & Watson, Ltd., Johannesburg; liquidation.
- Zeederberg Estate Company, Ltd., Pretoria; liquidation.
- Farmers' Co-operative Fertilizer Company, Ltd., Johannesburg; liquidation.
- Union Box Factory, Ltd., Johannesburg; destruction of books.
- United Agency and Trust Company, Ltd., Johannesburg; liquidation.
- Randfontein Exploration and Development Company, Ltd., Johannesburg; confirmation of agreement.
- The Corner and Estate Company, Ltd., Pretoria; reduction of capital.
- The Mines Meat Supply, Ltd., Randfontein; liquidation.

NOTICES OF INCREASE OF CAPITAL.

- Economic Coal and Produce Company, Ltd., Johannesburg; increased from £375 to £1,000.
- The Hellenic Community of Johannesburg, Johannesburg; increased from £7 10s. to £50.
- Save-all, Ltd., Johannesburg; increased from £450 to £600.
- Mauss Continuous Centrifugal Separator, Ltd., Johannesburg; increased from £12,000 to £15,000.
- Mann, George & Co. (Delagoa), Ltd., Johannesburg; increased from £50,000 to £250,000.
- Sivo Bros. & Karnovsky, Ltd., Johannesburg; increased from £5,000 to £75,000.
- The Planters and Importers Tea and Coffee Company, Ltd., Johannesburg; increased from £10,000 to £15,000.
- Maritzburg Motor Marts, Ltd., Johannesburg; increased from £1,000 to £20,000.

NOTICES OF LIQUIDATION.

- Rand Klip, Ltd., Johannesburg; voluntary.
- Broom, Ltd., Johannesburg; voluntary.
- Thienhaus & Watson, Ltd., Johannesburg; voluntary.
- The Zeederberg Estate Company, Ltd., Pretoria; voluntary.
- Farmers' Co-operative Fertilizer Company, Ltd., Ermelo; voluntary.
- United Agency and Trust Company, Ltd., Johannesburg; voluntary.
- Mines Meat Supply, Ltd., Johannesburg; voluntary.

New Patents.

732. Cornelis Frederik Delfos and James Wilshir.—Improvements in front-heads of rock drills.
733. Eustace Moriarty Weston.—Improvements in appliances for covering and protecting a certain part of the human body.
734. De Villers Curling Pritchard.—Extraction of motor and methylated spirits, paper pulp and fibre from the plant called *Priorium serratum*.
735. Joseph Leo Ashley.—Improvements in treating prickly pear.
736. Alfred Lucas von Mikar.—Bell piano.
737. Edwin Barnhope Hughes.—The "Durcir" process for hardening cane-wax.
738. Robert Sygertwood Esson.—Improvements relating to loose leaf binders and the like.
739. Frederick John Shillecock.—Improvements in boots for football and other athletic purposes.
740. Seguin Fisher.—Improvements in feed devices for rock drills.
741. Seguin Fisher.—Improvements in mountings for rock drills.
742. Emile Roirant.—Improvements in or relating to glass delivering and melting apparatus.
743. Berendonck's Syndicaat Voor Banden in Deelen.—Improvements in pneumatic tyres in motor vehicles and the like.
744. Andrew Kerr.—Improvements relating to train and like control systems.
745. The British Westinghouse Electric and Manufacturing Co., Ltd.—Improvements in steam turbines.
746. Gustaf Haglund.—Improvements in or relating to the separation and refining of metals.
747. Arthur Newton-Smith.—Improvements in the pickers of looms.
748. Arthur Newton-Smith.—Improvements in shuttle buffers for pickers of looms.
- 749.—Charles Joseph Rourke and Andrew Poulson.—Improvements in and relating to the bleaching of textile or fibrous material.
749. Charles Joseph Rourke and Andrew Poulson.—Improvements in struction of reinforced concrete ships.
751. Percival Turner Houston.—Improvements in or relating to internal combustion engines.
752. Kenneth Bingham Quinan.—Improvements in or relating to the cooling of fluids.
753. Joseph Edwin Markham Cooke.—Improvements relating to envelopes.
754. James Henry Green.—An improved metallic non-skidding and protecting device for pneumatic tyres.
755. Ernest Alexander Laidlow.—Improvements relating to automatic or semi-automatic telephone systems.
756. John Charles Gordon.—A new or improved socket or device for receiving or bearing screws, such as are employed for fastening purposes.
757. British United Shoe Machinery (South Africa), Ltd.—Improvements in or relating to last or last-part pulling.
758. Thomas Pettigrew.—Improved circuit arrangement for operating the selecting devices of telephone installations by number impulses.
759. British United Shoe Machinery (South Africa), Ltd.—Improvements in or relating to heel building, assembling and the like.
760. Frederick Haisman.—A rock drilling device for mining and other purposes.
761. Henry Wilson.—Improvements in or relating to impulse transmitters for automatic telephones.
762. Richard Henry Roberts and Percy Nichol Kingswell.—An improved collapsible box, case or crate.
763. Amalgamated Zinc (De Babay's), Ltd.—Improvements in the recovery of lead and silver from sulphide ores and metallurgical products.
764. Kohler Co.—An improved process of producing cast metal objects.
765. The Eclipse Petrol Economiser System Company, Ltd.—An improved carburettor.
766. Frederick Joseph O'Neill.—Electric lamp lock.
718. The American Machine and Foundry Co.—An improved automatic hand cigarette machine feed.
719. Dirk Lodewijk Kohlman.—Collapsible baby and wheeling chairs and carriages.
720. Harold Platt.—An improved method of fitting branch connections to pipes.
721. Labouchere & Company.—An improved process for the separation of diamonds from diamondiferous matter.
722. Henry Samuel Potter and Oliver Trevillion Jenkins.—Improvements in drills, bits or steels for use with hammer drills and the like.
723. Louis Robert Vierdag.—A chemical fertilizer.
724. Arthur George Dampier-Bennett.—Improvements in automatic air admission valves for internal combustion engines.
725. William Edwin Nettle, Paul Selby, James Blythe and Joseph Henry Holman.—Improvements in conveying liquid to rock drilling tools.
726. Margaretha Lesser.—An improved concentrator.
727. John Henry Moise.—The S.S. (Safe and Sure) Indigestion cure

Company Meetings.

SOUTHERN VAN RYN.

The adjourned annual meeting of shareholders in the Southern Van Ryn Reef G.M. Co., was held on Jan. 31 in the board room, Consolidated Goldfields Building. Mr. D. Christopherson, C.B.E., presided, and in moving the adoption of the report of the directors and statement of accounts, said:—Gentlemen,—This is the adjourned meeting from the 31st December last. You will doubtless be aware of the fact, as pointed out in the directors' report, that since the last annual meeting the technical and secretarial administration of your company has come under the Consolidated Gold Fields of South Africa, Limited, and that several changes have been made in the personnel of the board and of the London Committee. As, however, all these matters were the outcome of resolutions passed at special meetings of shareholders, it is unnecessary for me to deal further therewith. You have the report and accounts before you for the past financial year ended 31st October, 1918. If you will turn to the balance sheet you will find that the authorised capital is 615,000 shares of £1 each. Under the scheme which was sanctioned at the special general meeting held on 12th September, 1916, the board was authorised to increase the capital from time to time up to 415,000 shares, this number being inclusive of the 150,000 option shares to which I will refer later; while on the 25th April, 1918, the extraordinary general meeting of shareholders authorised a further increase of 200,000 shares for carrying out the agreement with the Consolidated Gold Fields. Thus we have a total authorised capital of 615,000 £1 shares of which 330,000 were at 31st October last under option as explained in the directors' report. As is also explained in the same report, there were, at 31st October, 1918, issued as fully paid 274,000 shares, leaving 340,600 shares to be taken up, of which 10,600 partly paid shares were to be issued to the subscribers when all instalments had been paid up thereon (the balance owing at that date being £2,800). Thus, including the 10,600 partly paid shares, the issued capital of 285,000 shares was represented by a total issued capital value of £282,200, as reflected in the balance sheet. Taking the credit side of the balance sheet, you will find that property account stands the same as before, viz., £124,460. Expenditure on equipment increased by £5,050, full details of which are set out in the schedule below. The commission account, being as you know in respect of rebate on certain shares issued by the company, is £63,368 15s., or an increase of £27,580 15s., such being of course, on account of commissions granted during the year under review. General expenditure for the year was £16,616, as detailed. The balance of working capital on hand at the end of the financial year, viz., £45,430 5s., was accounted for as under:—

Stores and material	£2,341 10 5
Livestock and vehicles, furniture, etc.	268 17 6
Investments	1,500 0 0
Sundry debtors	530 17 11
Net cash after allowing for liabilities	40,738 19 2
	£45,430 5 0

The other items in the balance sheet are not of special importance.

Reef Disclosures.

Full particulars of the reef disclosures in Boreholes Nos. 1 and 4 were published at the time and are again given in the consulting engineer's report. Although the respective widths and values as indicated by borehole sections are not in themselves encouraging, shareholders must bear in mind that these boreholes, which reached depths of 2,601 feet and 2,860 feet respectively, were for the purpose of determining the reef horizons as a guide for shaft-sinking, and not so much with the view of ascertaining widths and values, as it was realised that the boreholes were likely to strike the reef at points between the pay shoots. Mr. Leslie's statements in connection with this are reassuring in so far that he is satisfied that the sections of reef disclosed are similar in value and appearance to sections frequently met with between pay shoots in the Sub Nigel. The general experience on that mine has been that where values are found there has been an increase in the width of reef.

Another encouraging statement of Mr. Leslie's is wherein he points out that your property is situated in line with the course of enrichment upon which the most valuable mines on the Far East Rand are situated, and that in his opinion the prospects for development are favourable. On this advice the Board has decided at once to proceed with shaft-sinking; the survey work in connection therewith has been completed and the engineering staff are about to decide on the exact location of the shaft. When once all the preliminary work has been completed and the necessary plant and equipment acquired, sinking will be pushed on as rapidly as possible. The intention is to sink a central vertical shaft to a depth of approximately 3,300 feet in the northern deep level section of the property, where Mr. Leslie considers the reef should be found to have a low angle of inclination and where he expects encouraging development and favourable conditions for economical working. This shaft would commend the largest section of the property and the most suitable centre for delivery of ore to the surface, as well as for the rapid and extensive development which would be required to get a sufficient ore reserve for milling by the time a connection is made with the second shaft to be sunk later. The first shaft is being so located as to avoid as far as possible any regrettable mistake in determining a suitable site for any vertical shaft to be sunk to intersect reef on a higher horizon in this irregularly shaped property. The programme of shaft-sinking together with a certain amount of cross-cutting and development is estimated to cost somewhere about £300,000, spread over a period of four years. In 3½ years from the date of starting shaft-sinking, Mr. Leslie hopes that sufficient information will be available to enable the company to decide to embark on the final programme for reaching the producing stage, which he estimates would occupy a further period of 2½ years.

Option Shares.

We have been somewhat disappointed as regards the small number of applications received in respect of the

options to shareholders on the 150,000 shares. As you will remember the holders of the option certificates, in order to retain their rights, had to take up 25 per cent. of the shares not later than the 31st December, 1918, and to pay for same in ten equal consecutive monthly instalments, the first of such instalments to be paid not later than the 31st December, 1918. If all option holders had exercised their rights to 25 per cent. of the shares, that would have meant 45,000 shares being taken up at par, of which 15,669 would be in respect of the London registers and 29,331 shares on this side. At the moment we do not know what has been the result in regard to the option holders in England, but as regards South Africa, only 5,949 shares, representing a total holding of 23,680 shares, were applied for, leaving the option rights in respect of 93,645 shares not applied for on this side. This perhaps is hardly surprising in view of the fact that the market price of the shares at December 31, 1918, was only 12s. 9d. to 13s. each, but the fact remains that in so far as the financing of the company is concerned the above results are not satisfactory. On the other hand the Consolidated Goldfields, as you will be already aware, exercised its option on December 31 last on the 37,500 shares at par, and it still has the following options, namely:—

At par until December 31, 1919, on 37,500 shares at 25s. per share until December 31, 1920, on 75,000 shares; total, 112,500.

Briefly, the position is as under:—At the 31st of December last our cash position was roughly £43,000, excluding amounts on account of options exercisable at that date. Add to that the £37,500 in respect of the options which the Consolidated Goldfields exercised on December 31, 1918, and the £5,949 in respect of options exercised by other shareholders at the same time, the payments of which amounts in both cases are spread over 10 months. Then assume that as regards option rights on the London Register the results have been no better than in South Africa, that is to say that only about one-fifth of the option rights have been exercised as compared with what could have been exercised that would give us roughly say another £3,150. Thus in all we shall have in cash a total of approximately £89,600 by, say September 30, 1919.

Expenditure.

Under Mr. C. D. Leslie's programme which the directors have approved, the expenditure for the year is estimated at £88,000. Mr. Leslie's figures, however, do not provide for head office expenses, engineering fees, claim licences, etc. The programme also allows for an expenditure of £64,500 for the year 1920. It will therefore be seen that, subject, of course, to whatever further options may be exercised at December 31, 1919, and to the actual expenditure on the programme, consideration will have to be given to further financing the company towards the early part of next year. There is a matter I would like to refer to, viz: that of claim licences. The area of your property consists of 1,662 claims, and the claim licences at the rate of 5s. per prospecting licence per month amounts to £415 10s. per month, or close on £5,000 a year, half of which amount accrues to public revenue,

while the other half goes to the freehold owners. Under Section 20 of the Transvaal Mining Leases and Mineral Law Amendment Act, 1918, provision was made whereby the holder of a prospecting licence, if he satisfies the Mining Commissioner that he has expended, in work on any of the claims held thereunder, not less than £1 per month per claim, including the value of his own labour, shall have remitted to him so much of the licence moneys due on such claims as would accrue to the public revenue. In our case, therefore, we could claim by way of remission a maximum of £207 15s. per month. There are certain conditions in the law to which I need not refer, but (subject to an appeal to the Minister), the Mining Commissioner shall decide whether and to what extent the amount expended upon work done on any particular claim or claims, shall be considered for the purposes of arriving at the sum to be remitted. For some months past we have rendered statements to the Mining Commissioner, but owing to a difficulty on the Commissioner's part in arriving at just what constitutes actual bona fide development of the prospecting claims, he will only take into consideration towards mitigation of the amount spent on claim licences the actual expenditure on drilling, and refuses to allow such items as engineering fees, administration charges, including salaries at the mine, or even stores used in respect of other work at the mine. In our opinion, the Legislature in promulgating Section 20 of the Act, intended that the fullest relief and assistance should be afforded to such companies as yours, who are actively engaged in proving the existence of suspected reefs and ore bodies, and that such items as salaries, stores and general maintenance at the mine, and head office expenses, should be allowed to rank for remission of licences, as they fairly represent expenditure necessary to the exploitation and development of unproved areas just as much as the costs of drilling. The company has ceased actual drilling operations, so that at present we are refused any relief, but we are nevertheless paying claim licences in full, and the further questions therefore arise as to whether we should not even now obtain some relief; also, when we do commence shaft sinking, what the Mining Commissioner will allow as expenses to rank for remission of claim licences? We certainly think that allowances should be made. Steps have been taken to have the matter represented in the proper quarter, and I hope that the company will eventually derive the fullest consideration, which we firmly believe was the intention of the Legislature. Since the close of the financial year, your manager, Mr. Charles J. Tutt, resigned, and has recently joined the board of directors. We wish to record our appreciation of the work he carried out while manager of the property. I now beg to move the adoption of the report and accounts.

Nigel and Van Ryn Reefs.

Mr. W. E. Bleloch, in seconding the motion, said the scheme of development meant waiting a considerable number of years before they could get returns from the property. He had gone into the matter, and having regard to the peculiar reef occurrences of the Far East Rand, he was of opinion that Mr. Leslie's scheme of development was best and would result eventually in their being able to mine their reefs at the lowest expenditure and more advantageously than if they were to begin sinking from the surface. He was also in favour of the scheme for the reason that in the course of sinking they would section the whole

series of strata right down to the Nigel Reef and would intersect what they knew as the Van Ryn Reef of the Far East Rand. It was part of Mr. Leslie's scheme of development to put in drives so that successive shoots in these reefs could be opened up and in that way large sums would be saved. He had no doubt it would be possible to make suitable financial arrangements to carry out the scheme of development. Referring to recent development he said that owing to the difficulties of prospecting they had not been able to show very definite results. They had got both reefs, but in every case they had more or less poor values. It had to be borne in mind that the bore intersected a very small piece of reef, and he did not think shareholders had any reason to be discouraged. They had in the district south towards Heidelberg and still further forward opened up at several places both the Nigel and Van Ryn Reefs, and in both cases with encouraging values. They found that both reefs retained their special characteristics even at distances of 30 and 40 miles away from the Nigel. He believed if these were opened up they would establish there were great gold bearing reefs in the area in addition to the Nigel, and he left them to imagine what the influence would be on the fortunes of the Sub Nigel and their own property. In regard to the low price at which the shares stood in the market he reminded them that New Modders were once obtainable at 7s. 6d. and that Modders were obtainable not many years ago, he believed, at about 3s. 9d. Referring to the relief intended to be given to prospectors, he said that as far as the ordinary prospector was concerned there was practically no relief at all, and the intention of the Legislature was defeated by the difficulties with which the matter was hedged around.

The motion was carried and the changes in the directorate were approved.

STEEL CORPORATION.

The first annual meeting of the Union Steel Corporation of South Africa, Ltd., held in this country, took place on Jan. 31 in the board-room, Lewis and Marks Building, the control of the company having been transferred to this side, with a committee acting in London. There were present Messrs. Isaac Lewis (chairman), G. Falcke, O. T. Greener, C. B. Kingston, W. L. Penney, R. W. Townsend (representing the African-European Investment Co.), H. Dowdle and J. Blacklock, representing personally and by proxy 89,756 shares out of a total issue of 187,062 shares.

The chairman said: The net profit for the year carried to the balance sheet was £60,074 7s. 9d., as against £40,482 14s. 2d. in the previous year. This was after full provision had been made for depreciation on machinery, plant and buildings, for premium on debentures due for redemption this year, and after writing off £5,000, the balance of general expenditure during construction period carried forward from last year's accounts. The charges showed an increase on those of previous years, but that was the natural consequence of an increased turnover. There was a contingent liability in respect of income tax and excess profits duty in the United Kingdom, and for income tax in this country, in respect of which no assessment had been made.

After dealing with the balance sheet and explaining the difficulties of importing machinery and material from overseas owing to the war, the chairman said it had already been proved that pig-iron of excellent quality could be produced here. In the early stages of the operations the com-

pany had a very hard struggle for existence. During this time very little material assistance was received from the Government. It was only due to the intervention of influential shareholders that the works did not close down, and an industry of the first importance to the Union was not strangled at birth, so to speak. Owing to the conditions brought about by the war, the value of the industry had been forcibly brought home to the Government and other consumers. It was difficult to imagine what conditions would have prevailed had its promoters lost faith and abandoned their efforts to carry out the pioneering work in such adverse circumstances, and, now that the world's markets were again open, they might with justice claim tangible assistance from the Government such as that advocated by the Acting Prime Minister and the State Mining Engineer. The establishment of industries generally will tend greatly to solve the problem, already bristling with difficulties, of finding employment for the youth of the country, which was another cogent reason for their encouragement.

The experience gained by the company during these years of difficulty had been invaluable. Their products had given unqualified satisfaction to their customers, and had overcome the inherent prejudice against the "local article."

No Undue Privileges.

Continuing, the Chairman said:—It has been repeatedly stated by people—some of whom ought to have known better—that this Corporation has obtained undue privileges from the Government. Now, gentlemen, I want to correct that impression once and for all, and propose to do so by telling you the bare facts of the case. Prior to the inception of our Corporation scrap iron and steel was regarded here as practically useless and valueless, and was exported from our coasts in large quantities. In 1907, for instance, the tonnage shipped was no less than 30,647 tons, of which 8,047 went from the Transvaal. The price realised for this was from 7s. 6d. to 10s. per ton; and export was actually encouraged by a specially low railway rate. There were accumulations of old scrap in the railway yards, which in some instances were even embarrassing by reason of the large amount of space they occupied. The authorities wisely considered that this scrap might be used as an encouragement for the establishment of a steel industry, which would ultimately lead to the opening up and utilization of our native iron ores. Tenders for this scrap were invited, the successful tenderer in open competition being the late Mr. H. H. Wright. Mr. Wright, after having tried unsuccessfully to secure locally capital to work his project, came to England and endeavoured to persuade some of the Home iron masters to start the industry in the Union—and again failed. He then came to me. I can unblushingly claim that it has been one of the great ambitions of my firm to foster the establishment of industries in this new country, for we have always realised the immense effect that would inevitably have upon its future welfare. Moreover, we felt that this would be quite good business from even the purely commercial standpoint. In the end, we decided to take the matter up, and I managed to persuade a few friends in London to join us in this venture. The business was started in 1912, and in addition to the ordinary troubles incidental to starting a new industry of this magnitude in a new

country, we also had to contend with antagonism from the stronghold established by the foreign manufacturers and their agents in this country.

Initial Troubles Overcome.

As a result, the Corporation got into financial difficulties, and had to be assisted by the provision of considerable sums of money at a time when the outlook was far from encouraging. It is only during the last couple of years or so that the position may be stated to have been rehabilitated, and that we may be said to have successfully overcome all our initial troubles. It is only this year that the Company has been able to pay up the arrears of interest on the Preference Shares, and to repay its indebtedness in the shape of loans, etc. Over and above this, my firm may claim to have rendered the Corporation the greatest possible assistance by promoting the discovery of iron and manganese ores, suitable fluxes, etc., and generally in procuring the materials necessary for the Company's operations. As a matter of fact, we have laid out nearly £40,000 in hard cash in this connection, in respect of which so far practically no return has yet come to us. Our contract for the purchase of scrap from the Railway Administration stipulates that we take the scrap in the condition in which it exists, and at the sites where it is situated, and we pay all railage and handling charges. I must mention, too, that the price of £1 per ton at site is the minimum price paid, and this only applies to a proportion of our purchases from the Railway Administration; furthermore we can only get such scrap as is useless to them. So that I think it is quite clear that we have certainly received no privileges from the Railways or the Government. It may interest you to learn that we have already purchased from the Railways 29,923 tons of scrap for the sum of £35,472, and in addition have paid them £57,194 for railage. As regards the benefit that an industry of this character is to the country generally, I may tell you that, even in the present comparatively small stage of development, which, given a little practical encouragement, is nothing to what it should extend into, we have already paid out in wages to white employees since the inception of the company £153,747, and to natives £31,889. The average number of natives employed during 1916 was 280. Our total purchases of scrap, from all sources, since the formation of the company, have been 51,636 tons, the greater portion of which, but for our activities, would probably have been lost to the country. Now, it is a question for the people of this country to decide whether this, as well as many other industries, which have been created of late years, are to receive the necessary encouragement and assistance to enable them to develop the resources of the country with immense general benefit to the whole community, or whether they are to be allowed to dwindle away until we revert to the former stage when everything was imported from overseas (incidentally a large proportion of it from Germany), to the benefit mainly of a few agents and middlemen, so far as this country is concerned.

The report and accounts were adopted.

The election of Mr. O. T. Greener as a director was confirmed.

Messrs. Samuel Marks and Isaac Lewis were re-elected directors.

The auditors were re-appointed.

AFRICAN LIFE.

The fourteenth annual general meeting of the members and shareholders of the African Life Assurance Society, Limited, was held in the board room of the society, African Life Building, on January 31, when there were present, among others, Messrs. R. Bowman (in the chair), I. W. Schlesinger (Managing Director), W. O. Bullock, I. F. Atterbury, Francis Napier, J. A. MacRae (General Manager), F. T. Fowles, A. M. Clark, Myer Lichtenstein, D. M. Burton, D. H. Barnett, and A. Fuller-Jones (Secretary).

The Secretary, having read the notice convening the meeting, and also the auditor's report, and the minutes of the previous meeting having been confirmed,

Mr. Richard Bowman, the chairman, in moving the adoption of the directors' report and balance sheet, said:—Gentlemen,—It is my pleasant duty to-day to submit for your approval the directors' report, the revenue accounts and balance sheet for the year ended 31st December, 1918, audited records of a most eventful year. The directors' report, copies of which have been in your hands a few days, sets forth in outline the salient features of the year's transactions, but before I sit down I want to give you in detail—as briefly as possible—an account of our stewardship for the year, to tell you what we are doing, what we are trying to do, and what we aim to do in the future. The applications received in the ordinary department during the year number 8,163 to assure £2,909,150. Of these 1,359 for the sum of £504,000 were declined or postponed or not proceeded with, leaving 6,804 applications completed and policies issued totalling £2,405,150, an increase over last year's figures of 2,085 in number of policies issued and £782,700 in amount of assurances.

In the Industrial Department 72,156 policies were issued assuring £1,657,950 1s. 10d. In the two departments of the society's activities the total number of policies issued was 78,960, representing assurances amounting to £4,063,100 1s. 10d. At previous annual meetings of this society—every one of which has been a landmark on the road of progress—I have always been in the happy position of announcing remarkable figures. Those presented to-day are not only remarkable, but unique, and I have no doubt, will stir even the duller imagination; at any rate, they must help us all to picture what the future has in store for so virile a society which, at the end of its fourteenth year, can lay claim to such a performance and, be it remembered, at a procurement cost 8.78 per cent. less than during the previous year.

Income.

The ordinary department revenue account you will observe discloses the fact that renewal premiums exceed £200,000. New premiums amount to £93,296 0s. 7d. and interest and rent amount to £39,127 4s. 3d. These figures are undoubtedly highly gratifying. The first item, renewal premiums, is by far the largest amount ever collected by the society in any one year and exceeds last year's figures by over £30,000. The item £93,296 0s. 7d. new premiums is a South African record. It is the largest amount ever secured in new premiums by any company in this country, and exceeds our previous year's figures by £33,326. The item interest and rent exceeds the previous year's figures by £6,867 2s. 7d. The interest earnings for the year represent £6 1s. 4d. per cent. on the mean assurance fund, showing an increase of 7s. 3d. per cent. over last year.

If we turn now for a moment to the other side of the revenue account we find that claims amount to £163,542 in

the ordinary department, and £23,807 0s. 11d. in the Industrial Department. These are unusually large figures, and of the total amount of £187,000 odd in both departments, £145,000 is due entirely to the influenza epidemic which swept this country from end to end three months ago.

Last year I drew your attention to the rapidity of growth of the Industrial Department. You will observe from the premium income in the industrial revenue account that we are still developing rapidly, having exceeded last year's figures by almost £27,000. In accumulating premiums amounting to over £107,000 in one year, we have secured premier position in the South African industrial field, and I feel sure our industrial superintendents and agents will see to it that we retain that coveted honour against all comers.

Assets.

Referring to the balance sheet you will observe summarised in the usual form the assets of the society. The total funds have increased to £725,135 19s., and the total assets now stand at £814,814 14s. 4d. Now gentlemen, I think I have, without, I hope, unduly trying your patience, touched upon all matters in the accounts which are of any significance. I have only one word more to say. I wish to express the appreciation of the directors and I feel sure also that of everyone here to-day, for the loyalty and efficiency of the head office and branch office staffs and the agency staff. Splendid achievements—such as those I have touched upon to-day—cannot be attained without organisation and hard work, and in this connection our special thanks are due to the head office officials. For the agency staffs of both departments, no praise can be too high for their splendid and sustained efforts. The superintendents I wish to specially compliment upon their quality and efficiency, more particularly for the manner in which they have fostered, strengthened and stimulated the spirit of a common purpose, a binding unity throughout every section of the field force. Gentlemen, I now take pleasure in moving the adoption of the directors' report and balance sheet.

Mr. Schlesinger's Speech.

Mr. I. W. Schlesinger, the managing director, in seconding the motion, said: It is evident from the results obtained by the society for 1918, essential features of which were so ably put to you by the chairman, that the African Life had a record year. In the course of his remarks the chairman stated that: Each successive annual meeting constituted a landmark on the road to progress, and you, gentlemen, have no doubt familiarised yourselves year after year with the society's reports, and, of course, realised its phenomenal growth. These splendid reports year after year demand unremitting and persistent effort together with thorough organisation and co-ordination, and I submit should be considered by all interested in the society as a matter of great pride. The "Benjamin" of South African Companies in its fourteenth year leading the van in new Premium Income and Assurances written. Now, if these figures—new business figures—meant only bigness, mere bulk, just for the sake of advertisement without regard to quality and persistence of the business secured, they would still be wonderful, but we would have little cause for self-congratulation. I am glad, however, to be able to state that the business is first class in every respect. The large number of declined cases, already referred to, by Mr. Bowman, is some indication of the care with which the new business is dealt by the head office officials and by the medi-

cal department; and the improvement each year in the persistency of the business goes to show that from a financial point of view it is of good quality. The persistency of the business in the year under review is very encouraging and, in fact, is the best in the history of the society, as, of course, reference to the renewal premium figures in the revenue accounts clearly indicates.

Epidemic Claims.

The outstanding feature of the revenue accounts before you is, as you will see, the large call which has been made on the society for the payment of death claims due to the epidemic; but the fact that the society has been able to pay this large sum out of one year's premium income without drawing upon its reserves, is a tribute to the strong position of the African Life. The epidemic came as a surprise to all of us; but, as I have frequently stated, a well-managed Life Assurance Society will never be surprised by surprises. The savings in mortality in normal years, entirely due to careful selection of lives, greatly counter-balance excessive mortality such as experienced during the year under review. I do not want to close my remarks regarding the epidemic without making some observations as to the estimated total deaths submitted to Parliament. Personally, I am of opinion that the totals are under-estimated; as a matter of fact, I do not believe that the actual figures will ever be known. I am aware of scores and scores of deaths of persons who were insured in this society, in respect of which no official record can be obtained. Even in Capetown, where one would think a burial could not take place without the death having first been duly reported, no trace of registration can be found. Needless to say, and in order to assist the bereaved, who in the majority of cases were entirely dependent upon the insurance money to meet burial expenses, we felt compelled to pay out a great number of industrial death claims on the scantiest possible evidence of death, consisting in many cases of merely a certificate from a friend or relative stating that death had occurred and that the person was buried.

A Danger to be Met.

In view of these facts, I do not think there can be any difference of opinion that this is a state of affairs which demands immediate enquiry by the authorities, for if such laxity is allowed to prevail for any length of time it will undoubtedly set a premium upon specialised crime and be the determining factor in ever-widening the sluice gates of crime, which, even to-day are not by any means acting as efficiently as the public welfare demands. Parliament should not be satisfied with estimated totals but should demand the actual number of deaths. If this is unobtainable, then it is up to the Legislators of the Union to frame a law making it compulsory to register all deaths—European, coloured and native. To this day deaths of coloured persons and natives need not be registered in the Free State, thus where a doctor has not been in attendance, any legal or satisfactory proof of death is impossible to be obtained.

With regard to plagues and epidemics in general, bearing in mind the present acute shortage of doctors and nurses, Parliament should immediately establish a Public Health Service, which should issue calls from time to time to the people of the country to learn something about the home care of patients. The present generation has been spoiled by having had expert medical and nursing care readily available. It was not so in the days of our grandmothers, when every good housewife was expected to know a good deal about the care of the sick.

While I cheerfully recognise all the good that has been done by the trained nurses, I believe that the public generally has come to rely too much on their services and has not interested itself sufficiently in studying ordinary home care of the sick. A Public Health Service on the lines suggested would accomplish wonders. Our industrial department employs some 2,000 active door-to-door collecting agents who operate in every town, village and hamlet throughout this country, and we freely offer the services of this army of agents to the Government whenever they desire to carry out propaganda work relative to public health.

Public Health Bill.

Before closing my remarks I wish to make some observations on two matters which I consider of great importance to life insurance companies—I refer to (1) The proposed Public Health Bill, 1919; (2) the proposed Inquest Bill, 1919. With regard to the first numbered, all I wish to say is that any Government measure such as this, which makes for physical, mental and moral uplift; which stimulates thrift and defeats improvidence; which circumvents disease and makes for health; which undoubtedly will help greatly to prolong life, is one which, apart from its manifold benefits to the community at large, we, as a life insurance company, should be very thankful for indeed. The proposed Public Health Bill, if passed without any material amendments, will undoubtedly supply a long felt want, and it is not too much to say that the country will owe a great debt of gratitude to those responsible for placing it on the Statute Book. Now, as regards the Inquest Bill, I have read the draft very carefully and given the matter some thought and consideration with special view of the moral aspects of the whole question, and it is much to be regretted that the Bill as drafted, to all intents and purposes, exhibits no improvement upon the existing Inquest Laws, which, without doubt, are ridiculously lax and, in my opinion, dangerously subversive of public policy—in brief they not only encourage criminality but actually protect the criminal. I ask, gentlemen, what comfort can any one (other than the criminally inclined) derive from the Inquest Bill now before Parliament—none whatsoever.

Uninvestigated Deaths.

As regards uninvestigated deaths, the first paragraph of the Bill makes it clear that it deals only with deaths that appear to be the result of violence, etc. The violence or unnatural cause must be apparent before a death can be dealt with under this measure, which really means in most cases that unless violence or unnatural cause is apparent to the sergeant or corporal of police stationed in the district where the death occurred the burial order is issued without any investigation. No medical certificate is required, no post-mortem is held, no effort whatever is made by the Government to discover whether the report made is true or untrue. There are some points in connection with the certification of the causes of death on which I wish to throw a little light, after which you will be in a position to say whether the public in general and insurance companies in particular are dealt fairly with by the Government Department which presides over this important subject. Recently an insuror in this company took out a life policy for £750. He was a young man, the only history of past disease alleged was 14 days' malaria of a mild type in German West in 1916. The medical examination revealed that he was organically sound and in good health. Four

months after taking out his policy he died "suddenly" in Johannesburg; the body is subjected to a post-mortem examination by a district surgeon who certifies the cause of death to be "Malaria, Heart-failure." Heart-failure is obvious, but what evidence was there of Malaria. Was the blood examined for the Malaria parasites? No. Is there any other means of detecting malaria post-mortem? I have good authority for saying that there is not, and even if the parasite was found it would not be proof that it was the cause of sudden death or even death. Was the stomach analysed with a view to discovering poison? Poisons very frequently cause sudden death. No effort was made in this direction because there is a Government circular which forbids this being done unless there are "Good grounds for believing that poison has been administered." The Government apparently expects murderers to notify it of the details of the crime which they have committed, within 24 hours of the death of the victim, or the body will be buried and the evidence of the crime with it. And what about suicide—suicide is not a crime in this country—so if there is no naked-eye evidence that poison has been administered, malaria or any other natural cause may be assigned to account for the death and the insurance company has got to pay. If this, gentlemen, can be done in Johannesburg, what could be done in the country districts? I will tell you what is done. The death is reported to the police or field cornet, the report is accepted and the body is buried unless it is alleged that death is not due to natural causes, in which circumstances an enquiry would be held. Can you imagine any regulations which would make crime more easy? Is it surprising that such laxity as this should be taken advantage of or that the soil of South Africa should cover more unsifted evidence of crime than that of any civilised country has any right to?

Points for Legislators.

The remedy is apparent and it is to be hoped that our legislators will see the wisdom of amending the draft Bill now before them, so as to embrace the following important provisions

(1) That a post-mortem examination should be held in every case of death which is not certified by a legally qualified medical practitioner.

(2) That the post-mortem examination should be thorough, and the finding should be based on the pathological evidence discovered.

(3) That if no naked-eye pathological condition exists which would account for death, the fact should be stated.

(4) That the pathologists' hands should not be tied in the matter of analysis of the viscera, when they may possibly furnish the evidence he is looking for.

Gentleman, I now take much pleasure in seconding the adoption of the report and balance sheet.

The report and balance sheet were unanimously adopted.

There being no other nomination, the retiring directors, Messrs Richard Bowman and Francis Napier, were re-elected. The retiring auditors, Messrs. Deloitte, Plender, Griffiths, Annan and Company, were re-elected, and their remuneration for the past year was fixed at 750 guineas.

The meeting terminated with the usual vote of thanks to the chair.

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Notes and News

Several important contributions to the discussion on the gold question appear in this issue. **The Gold Question.** Most notable, doubtless, is the report of the American Committee, to which we are privileged to give publicity in this country. A more complete report of the reply of the London Committee, representing the gold producers, to the Incheape Report, is also printed in this issue, and a summary of the chief points in the Treasury and Reconstruction Ministry's report—shortly known as the Vassar-Smith report—is included. A cabled summary of the demands of the Australian gold producers, also appearing this week, shows that they agree substantially with the findings of the American State Committee. There is, therefore, no lack of data on the subject, and we hope the fact will encourage our leading mining men and economists to come forward unreservedly with their views.

* * * *

Several papers of unusual interest were read at the monthly meeting of the S.A. Institution of **S.A.I. of E. Engineers** on Wednesday evening. Three contributions were read on the important subject of jackhammers, and these are dealt with in our leading columns. The discussion on the design of shafts was advanced a further stage by a supplementary paper by Mr. Stuart Martin, dealing with water in circular shafts, and this was followed by an interesting contribution from Mr. Isaac Hodges, of Vereeniging, on the merits of circular shafts. Mr. Hodges did not disguise his advocacy of the circular design of shaft, and he had no difficulty in showing that the handling of large quantities of water in circular shafts presented no insuperable obstacle. Arising out of Mr. Elsdon Dew's paper, some important contributions were read in regard to engineering economies effected on the mines during the war, and notable examples from the Wit. Deep and Village Main Reef were quoted in detail. We hope to reproduce these contributions in an early issue.

* * * *

The Swift water-feed attachment for piston drills has been fitted to Holman drills at the Crown Mines for the past three months, and has given good results. Tests made by an expert have shown that the amount of dust created when drilling with this attachment fitted is practically negligible. It is further claimed that there is no fogging, that the device means great economy in the direction of saving steel, and also a saving in air at the front end of the machine and in water. Other advantages of the device are claimed, and these, together with notes on the construction of the device, we hope to deal with in our next issue.

* * * *

It will be remembered that early last year the property at Barberton of the well-known old Sheba G.M. **Sheba Gold.** Company, Limited, was closed down until general conditions should be favourable for raising fresh working capital. In the circumstances it is not surprising, therefore, that for the year ended June 30, a debit of £8,860 has had to be charged against reserve, reducing that fund to £3,140. The estimated ore reserves at the date of closing down were 58,000 tons, averaging 7 dwts. per ton. According to the latest information there are indications of payable ore again being encountered when normal conditions prevail and arrangements can be made to provide the necessary funds for development purposes.

* * * *

After twelve months' discussion and two ballots, the Miners' Union have accepted the final offer of the Chamber of Mines regarding the form of contract for mines on the contract system in place of the various guarantees on different sections of the Reef. The Chamber

offered a minimum of £1 per shift, plus contract rates where the minimum is less than £1 per day. There will be an adjustment for fathomage to make up for the increased guarantee. The Chamber agrees to the union appointing a committee to see that no advantage is taken of the contractors in making the adjustment. The system of deducting from a man's pay the losses of the previous month is to be abolished except in the case of a man beginning work on a mine, and making a loss on the first month. In such a case the Chamber reserves the right to deduct the loss from the following month's earnings. Provision is also made for uniform charges for stores throughout the Rand.

* * * *

The Registrar of Companies in his annual report for 1917, issued this week, says that the number of companies registered was 342 for the Transvaal, 104 for the Cape, 45 for Natal and 29 for the Free State. The number of increases of capital was 48 for the Transvaal, 8 for the Cape, 23 for Natal and 9 for the Orange Free State. The Transvaal increases totalled in round figures £753,000, the Cape £122,000, Natal £604,000 and the Free State £369,000. Company liquidations numbered 69 in the Transvaal, 25 in the Cape, nil in Natal and 2 in the Free State. The capital involved amounted to £1,457,000 in the Transvaal, £890,000 in the Cape, Natal nil and the Free State £8,000. Of the Transvaal companies, 91 were companies the members of which were all Asiatics. Four associations not for profit were registered. The nominal capital of companies incorporated in the Transvaal during the year was £3,952,000 and of foreign companies registered during the same period £1,016,000. Forty-two defunct companies were dissolved in the same Province. The Registrar draws attention to the necessity for the consolidation of the Companies Acts and special attention to the large number of Asiatic companies, the objects of which are well known.

* * * *

In his annual report for 1917, issued this week, the Registrar of Patents says: As regards patents during 1917, 876 applications were received and 347 granted, against 594 applications and 400 patents granted in 1916. Of the 876 applications, 320 originated from within the Union, 351 from the British Isles and 75 from British Colonies, 130 coming from foreign countries. The inventions chiefly sought to be protected were boot and shoe machinery, extraction of metals and alloys, acids and alkalies, cutting and working of stone, agricultural appliances, hydraulic machinery, rotary engines, wheels, tyres, steam engines, air and gas engines, buildings, lifting appliances, mining appliances, medicines and aeronautics. In his comments the Commissioner draws attention to the fact that the new Union Act came into operation on the 1st January, 1917, and effected far reaching changes. Whereas it formerly cost £32 11s. 6d. in application fees and £109 10s. in renewal fees to patent an invention in the four Provinces of the Union, protection can now be obtained for £5 10s. in application fees and £20 in renewal fees. A large increase in the patents applied for has resulted from the reduction of the fees.

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A few weeks ago we gave some particulars of the venture that has made its appearance on the Stock Exchange in the last few days under the name of South-West Diamonds. The object of the company is to dredge for diamonds off the shore of South-West Africa in the neighbourhood of Pomona, and a concession from the Government has been obtained for that purpose, the royalty payable being 40 per cent. The capital of the company is £250,000, of which the vendors take half, and the balance will be issued for working capital, as and when required. An initial amount of £10,000 has been subscribed, and guarantees for further amounts secured. The directors are

Messrs. A. C. Hughes, Birch (of the Graaf Trust), and Carrol (the original concessionaire). Mr. J. W. Craig, late of the Consolidated Gold Fields, is in charge of the dredging operations.

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A conference of Australian gold producers at Melbourne has passed a resolution asking for the removal of Federal and State taxation on gold mining; also the admission of the supplies needed by the gold-mining industry duty free; also the payment of substantial Government rewards for the discovery of new goldfields and the construction of dams, wells and bores in Western, Northern and Central Australia. The Conference also resolved to ask the Repatriation Department to consider the question of subsidising prospecting by returned soldiers. It will be noted that these demands are substantially the same as the recommendations of the American Committee on Gold Production, printed elsewhere in this issue.

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The next ordinary general meeting of the Chemical, Metallurgical and Mining Society will be held in the Lecture Theatre, South African School of Mines and Technology, Johannesburg, this Saturday evening, at 7.45 o'clock. Mr. C. Toombs will reply to the discussion on "Assay Supplies." Discussion will be continued on "The Furnace as an adjunct to the Smithy on a Gold Mine." In this connection attention is drawn to the Report on "Economies in Mining Engineering Supplies." Paper for Reading: "Ancient Tin Mines of the Transvaal," by Mr. Max Baumann. A number of interesting implements used by the ancient workers will be exhibited. Mr. C. A. Meiklejohn and Mr. G. A. Watermeyer will very briefly introduce their respective papers on "The Determination of Available CaO in the Different Classes of Lime supplied to Rand Reduction Works," and "The Application of the Theory of Probability in the Determination of Ore Reserves." Replies to Discussion: (1) Mr. John Innes on "The Estimation of Injurious Dust in Mine Air by the Kotze Konimeter"; (2) "Further Notes on Sand Filling of Mines," by Mr. C. H. Greathead. Final Discussion: (1) "The Cementation Process applied to Mining (Francois System)," by Mr. A. H. Krynauw; (2) "The Estimation of Oxygen in Working Cyanide Solutions," by Mr. H. A. White; (3) "Notes on the Removal of a Vertical Shaft Pillar," by Mr. J. Chilton. Continued Discussion: (1) "The Effects of Dust Inhalation," by Dr. J. S. Haldane, F.R.S. Mining members are particularly requested to give the subject matter their earnest consideration, and to forward contributions to the discussion, if unable to be present. (2) "Notes on the Footwall Beds of the Far East Rand Reef," by Mr. L. W. Macer.

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At the recent meeting of the Mashonaland Consolidated (1912), Limited, held in London, Mr. Sidney S. Kennedy's scheme for reorganising the capital of the company and providing fresh working resources was approved. The scheme is, briefly, to divide the issued capital (741,888 5s. shares) into 741,888 Ordinary 1s. shares and a like number of 4s. Deferred shares; further, to divide the unissued 458,112 5s. shares into 2,290,560 1s. Ordinary shares. Of the future profits of the company 80 per cent. are to go to the holders of the 1s. Ordinary shares and the balance to the 4s. Deferred shares. Of the 2,290,560 unissued 1s. shares 1,483,776 are to be offered to shareholders at par so soon as Treasury sanction has been obtained. Subscribers will be given an option at par for a year after the formal declaration of peace on one additional share for every two taken up under the above offer. The subscription of 400,000 shares is guaranteed by Mr. Kennedy, backed, as he explained at the meeting of the company, by some influential gentlemen of ample financial resources.

TOPICS OF THE WEEK.

THE IMPORTANCE OF THE JACK-HAMMER.

ONE of the most important developments in the mining industry of recent years has been the evolution of the jackhammer. Some of our American friends call it the "Jackhamer," but this spelling has not been generally accepted, and it has come to be regarded as the special perquisite of the Ingersoll Rand Company. A lively discussion on the whole subject—the machine, not the name—has lately been begun before the South African Institution of Engineers resulting from the reading of a paper by Mr. H. S. Potter on the history, design and operation of hammer drills. Ever since the days of the famous stope drill contests, credit for the origin of which we take to ourselves, and which were later promoted by the Chamber of Mines, the small, light hammer drill has been growing in usefulness and popularity on these fields; and the position to-day is that there are some three dozen different machines, the products of some nine different makers, competing for the favour of the industry. The moment indeed seems propitious for the offer by the Chamber of Mines or some public-spirited mine magnate of a prize for the best modern hammer drill, though the monetary reward for excellence in this field is already great enough—without any special inducement—to tempt manufacturers to put forth their very best efforts. Our columns, it may be added, would gladly extend every publicity to such an offer. The recent acute shortage of native labour emphasised the value of a hammer drill that would do the work of several boys, and this fact called for special mention from the President of the Chamber of Mines who happened to be present at a recent meeting of the Institution of Engineers. The President said he was especially struck by the fact that one jackhammer did the work of six natives, and he went on to encourage the engineers to co-ordinate their efforts in this promising field of labour saving. Mr. Potter's paper gave a very fair and unbiassed description of the different jackhammers now in use on the Rand, and several of his competitors have testified to the evenness with which he held the scales of justice. In commenting on the paper, Mr. C. D. Leslie, the President of the Institution of Engineers, said that it was a most able and consecutive history of the hammer drill by a past master on the subject. "Mining," said Mr. Leslie, "was a very simple thing: it consisted mostly of drilling holes. The drilling of holes was the most expensive operation in mining, and the manner in which it was done caused greater fluctuation in profits than any other mining operation. Mr. Potter had indicated the big advance that had been made in steel and its treatment, and on the Rand they looked forward to the local manufacture of the rock drill and its accessories, all of which must be designed with a view to helping to solve the miners' phthisis problem by keeping down dust." At the monthly meeting of the Institution last Wednesday the discussion was continued by Mr. J. J. Wessels, by Mr. Harris of the Denver Rock Drill Company, and by Mr. Stuart Martin. The last-named made a brief contribution of a very important nature. He said that the question of lubrication was too often ignored in regard to jackhammers, and at least one machine had been condemned on the Rand because of insufficient attention to this factor. He also dwelt upon the delicacy of the jackhammer, and made the valuable practical suggestion that the machines should be sent down to the mine in boxes and replaced in their boxes when not in use. Mr. Harris paid a tribute to the fairness exhibited by the author of the paper towards his competitors; and his contribution was also

enriched by some valuable constructive proposals. He suggested that Mr. R. M. Catlin, formerly of the Rand, and now in charge of a big mine in the United States, should be asked to favour the Institution with some of the data he has been collecting during the past ten years on the subject of rock drills, big and little. It is known that Mr. Catlin has devoted himself to a thorough study of the comparative merits of different drills spread over a lengthy period, and tried under actual working conditions. It is to be hoped the Council of the Institution will act upon this suggestion. A contribution also of a very valuable practical sort was made by Mr. J. J. Wessels, the manager of the Robinson Deep, who has for a long time past made the jackhammer his pet study. Readers may remember that a prominent place has been given to the subject in the annual reports from this mine, and the views expressed by Mr. Wessels are therefore of exceptional interest. His notes on the subject we hope to reproduce in an early issue, and here we may call attention to his advocacy of co-ordination of effort between the mines and the manufacturers in order to secure the earliest and most effective results. The author of the paper, as a fact, made a similar suggestion at a previous meeting when he declared that he had discussed the question of co-ordination with several managers on the Reef with regard to hammer drills, and he had suggested that the formation of a standing committee consisting of a manager, an engineer, a rock drill fitter and a blacksmith might do much good in co-ordinating designs of machines suitable to their conditions. That committee, he admitted, would not be of much use unless it was supported by a bureau and a secretariat to collect information in order that rock drill practice might be properly studied and the causes of past failures ascertained. He knew this was done in a number of organisations in America and on the Continent. Rock drill manufacturers had complete museums of their past practice and competing machines, and he suggested the formation of such a museum in connection with the committee. He expressed the opinion that information and investigation as to rock drills would save thousands of pounds. To this view Mr. Wessels very wholeheartedly subscribed the other night, and there does not seem any valid argument against it. The jackhammer has come to stay. Its potentiality as an underground labour-saving device is unquestioned. In the interests of economy and efficiency it manifestly behoves the industry to co-operate actively and directly with the manufacturers in evolving the machine that will go nearest to realising their ambitions.

At the meeting of the African and European Investment Company, Limited, held recently in London, the Chairman, Mr. C. F. Rowsell, was able to make the pleasing announcement that instead of the company's share and debenture holdings showing a depreciation of nearly £107,000, as they did at the date of the balance sheet, 30th June last, they now exhibit an appreciation over the book valuation of no less than £56,640. Mr. Rowsell reminded shareholders that their company is "one of the greatest land-owning companies in South Africa," and that as the ground had mostly been selected by two of the pioneers of the colony—Mr. Isaac Lewis and Senator Marks—they might rest assured that it was second to none in that country. Both of these experts are still of opinion that South African land values will rise very substantially. Nevertheless, a programme is being considered to commence selling the company's land on terms considered likely to be satisfactory both to itself and to farmers. A scheme is under consideration by all the big land-owning companies to direct emigration to South Africa on properly organised lines. The Chairman went on to deal with the various allied enterprises in which the company is so largely interested, namely, the Union Steel Corporation, the Vereeniging Estates, the East Rand Mining Estates, etc. The future of the African and European Company itself, in his opinion, however, resided chiefly in its land holdings, as to which he concluded by reiterating his hopefulness.

POSITION AND PROSPECTS OF THE E.R.P.M.

Why Southern Section Development Scheme was Abandoned—Life of Two Years—Points from the Consulting Engineer's Report.

In his report on the operations of the East Rand Proprietary Mines, Ltd., for the year 1918, Mr. E. H. Clifford, the consulting engineer, writes:—The following statement shows the results of the year's work as compared with those of 1916 and 1917:

	1916	1917.	1918.
Tons milled	1,939,200	1,741,300	1,372,300
Working costs per ton	19s. 3d.	19s. 9d.	22s. 6d.
Revenue per ton ...	24s. 5d.	21s. 11d.	23s. 3d.
Profit per ton	5s. 2d.	2s. 2d.	9d.
Total profit	£497,165	£188,951	£52,916
Dividends	£61,147	Nil.	Nil.
Development footage	41,171	42,189	19,372
Ore reserve tonnage	4,200,000	2,732,000	2,268,000
Value of ore reserve	6.1 dwts.	6.2 dwts.	6.5 dwts.
Coloured labour strength			
—average	14,713	12,431	10,969

Further details will be found in the manager's report. With reference to this table, it should be noted that "Working costs per ton" included in 1918 certain items of expenditure, which were not so included in 1916 and 1917, but charged against revenue. These additional items amounted to 1s. 3d. and 1s. 2d. per ton, and the gross working costs for 1916, 1917 and 1918 would, therefore, be 20s. 6d., 20s. 11d., and 22s. 6d. per ton, respectively. The difficulties which the East Rand Proprietary Mines, Ltd., in common with the industry generally, has had to face are more serious than ever, and unfortunately they have come at a time when the mine is in an extremely bad position to meet them. Working costs have increased, as you will see, by 1s. 7d. per ton, partly on account of the extreme shortage of native labour, and partly because of the increase in the price of stores and white wages. Under normal conditions the East Rand Proprietary Mines, Ltd., requires 15,000 native labourers, but the average strength during the whole year was 10,969, and to-day it is even less; in consequence, the tonnage declined to such an extent that the incidence of standing charges became abnormally heavy. Regarding the effect of white labour and the price of stores on working costs, I may say that the average number of white men working was 1,440, and the cost per man per month has increased from £34 1s. 10d. in 1917 to £35 4s. 2d. in 1918, the corresponding figure for 1914 being £29 7s. 5d. The cost of the stores consumed in 1918 was £514,835, whereas the same amount of stores at 1914 prices would have cost £408,835. The working costs include the whole of the expenditure on development, amounting to £106,664. The yield per ton has increased appreciably, and a further improvement is expected. This is due to the mining of some of the higher grade blocks recently developed, and also, to some extent, to the stoppage of the poorer stopes as the result of the serious shortfall in the labour supply. The agreement with the Cinderella Consolidated Gold Mines, Ltd., under which we were given facilities for development from that company's workings, was terminated at our instance during the year. The urgent problem of prolonging the life of the mine to the utmost possible extent has been steadily kept in view, because on this point hangs the practicability of carrying out the Southern Areas Scheme. The difference in cost of a particular development programme on a producing mine as compared with a non-producing mine is always large, and, in this instance, on account of the very heavy pumping and other standing charges, the difference is so great that failure to continue production would render impracticable the Southern Areas Scheme, which, under more favourable conditions, might have been carried through.

REVIEW OF THE POSITION.

I propose to give you an account of the steps taken, the results achieved, and the extent to which we have fallen short of the object in view. Attached to this report will be found a plan of the underground workings, showing the disposition of the worked-out areas, and the payable and unpayable ore, as far as is at present known. You will observe the prevalence of unpayable ore along the whole extent of the bottom workings of the mine and the eastern workings of the Cason—in fact, it may be said, with the exception of three isolated localities, to be referred to later, that the mine workings are bounded on the south and east by a continuous fringe of unpayable ore. At the bottom of the mine, level after level revealed the same state of affairs, and in the Cason section nearly every drive has been unpayable for hundreds and, in some cases, thousands of feet. This latter section, on account of its accessibility to a well equipped main shaft, might have saved the situation had even a moderate amount of payable ore been found, but a very large expenditure made in 1917 for this object was unsuccessful. The following figures show the amount of money spent during the last three years and the results obtained:—Spent on development and shaft sinking (excluding expenditure on Southern Areas Scheme), 1916 £328,991, 1917 £277,998, 1918 £106,664; payable ore developed, 1916 585,558 tons, 1917 424,675 tons, 1918 337,710 tons; value per ton, 1916 6.1 dwts., 1917 6.6 dwts., 1918 7.3 dwts.; cost per payable ton developed, 1916 11s. 3d., 1917 13s. 1d., 1918 6s. 4d. The payable tonnage developed during 1916 and 1917 was far short of the amount then being taken from reserves, and further, the cost of development, together with cost of mining and treatment, would come to a much higher figure than the value of the gold contents. Notwithstanding the large funds specifically set aside for development and the vital necessity of obtaining payable ore, we could not continue spending money indefinitely in the light of such totally deficient results as had been obtained during 1916 and 1917, and the conviction was forced upon us that an adequate trial had been made, and nothing further could be hoped for by continuing this policy. Accordingly, it was decided to devote the resources at the company's command to development in areas where profitable results were reasonably certain. A reference to the above table will show that this policy has been successful in the sense that the results obtained in 1918 will show a substantial profit, but, as was expected, the new tonnage developed still remains very far short of the amount necessary for our main purpose. The question whether any particular district should be developed was determined entirely by its prospects, and wherever there have been encouraging features in any part of the mine, money and labour have been devoted to prove it. There are three principal localities in which payable ore is being found, namely, the Driefontein section, close to your western boundary, on the 25th and 27th levels; the lowest workings of the Hercules section, on the 33rd level, just to the west of the shaft; and the most easterly workings of the Cason Mine between the 24th and 27th levels, referred to as the Cason-Cinderella section. It is true there are isolated patches of payable ore in other districts, but broadly speaking, the above-mentioned localities are the only ones where any considerable extent of payable ore has been found. Unfortunately, these districts are widely separated, and necessitate for their working the operation of several expensive hoisting equipments, which militates against any policy of economically working the mine on a smaller scale. The possibilities of extension are in all three cases restricted. On the Driefontein, there is a probability of the extension of the payable area in depth, but towards the west it is terminated by the boundary of your property, and on the east by an extensive area of badly faulted and quite unpayable ground. The payable section at the Hercules shaft was discovered during the course of the year, and any consider-

able extension can only be in a southerly direction. Unfortunately, this entails expensive dead-work in the form of shaft sinking, and we are getting perilously near the water-bearing zone. In the Cason-Cinderella section the values are good, and, although there is some falling off in the only direction in which we can extend, namely, to the east, the indications are satisfactory. The most attractive of the three areas is the Driefontein, not only because it is the most extensive, but because it forms an integral part of the Southern Areas Scheme. Should the latter be undertaken, it would be necessary to form a connection with the new main shaft through this section. Apart from these districts, development and prospecting has been done in the old workings, with fairly satisfactory results. The ore remaining is naturally small in amount and expensive to get at, otherwise it would not have been left.

ORE RESERVE POSITION.

The ore reserves as at 31st December, 1918, were as follows:—2,268,000 tons of the value of 6.5 dwts. This includes about 300,000 tons that will not be available for mining till the latter half of the year, and 255,390 tons in the form of shaft pillars. The ore reserves at the end of 1917 amounted to 2,732,000 tons, so that, in spite of the efforts made, the ore reserves continue to diminish. The theoretical life of the reserves, at the rate at which they are being depleted, is 27 months, but it is extremely difficult to say how far the depletion can be carried. It is certain that we shall have to close down before they are completely worked out, but, on the other hand, it is probable that further additions will be made to the reserve during the present year. Favourable conditions may extend the life several months, but any serious difficulty may terminate it abruptly. Under present conditions it seems unlikely that the mine will be able to see the year 1920 through without working at a loss. I now propose to describe, without going into great detail, the chief features of the Southern Areas Scheme, and to give the reasons that led to its abandonment. Below the bottom workings of the greater part of the mine, and cutting diagonally through the lower Driefontein section, the reef is intersected by the so-called water zone. This zone is associated with a considerable dislocation of the strata and consists of a ramifying series of fissures of indefinite extent, containing large quantities of water under very great pressure. The results of incautiously intersecting any of these fissures are very serious indeed. All stoping operations must be kept well away from them, and they can only be successfully passed through after the most elaborate precautions have been taken and by the use of the cementation process, unless, indeed, the attempt is made to drain away the water. This, however, would involve the installation of pumping equipment for raising something like 5,000,000 gallons per day from a vertical depth of 6,000 feet; a difficult and expensive undertaking, and one that might not achieve its object. Consequently, we have to open up and equip an entirely new mine south of the water zone, and this can only be done by sinking a new main shaft from the surface. The second outlet, as already mentioned, would be made through the Driefontein, where most of the water has been drained from the fissures. The new shaft has already been sunk to a depth of 1,000 feet; it is circular—20 feet in diameter—and has been designed for hoisting ore from a depth of 7,000 feet, which depth is considered, in this case, to be the limit of practicable mining. This limit depends upon two factors, (a) the value of the ore, which is unknown, and (b) the physical conditions, which are also unknown. It is not possible to make a close guess at the truth in the face of two unknowns of this kind, but there are manifest signs of growing difficulties in the workings at 4,500 feet, involving great expense, which is certain to become more serious at 7,000 feet. Apart from anything else, the rock temperature will be so high as to necessitate very elaborate ventilating arrangements. No mine in any part of the world has yet attained a depth of 6,000 feet. The estimated position of the 7,000 feet horizon is indicated on the plan, the effective reef area above it being at most 650 claims. Considering the large expenditure necessary to bring the mine to a producing stage, this area

is far too small. It was at one time thought that the reef might be found at a much shallower depth, and accordingly the effective area south of the water zone would be larger than that indicated on the plan. A careful examination made in the light of more complete knowledge of the geological structure of the neighbourhood failed to reveal any considerable amount of upthrow faulting, and there appears to be only the moderate degree of flattening shown on the cross-section. We cannot, however, prove this point, as the reef is at too great a depth to be reached by boreholes, which always deviate excessively by the time they reach 5,000 feet, and we have, therefore, to rely on general geological observations. These, however, are quite consistent, and it is unlikely that the depth is wrongly estimated to the extent of 500 feet either way, a figure which would make no material difference to your policy. In order to sink the main shaft to a depth of 7,000 feet, to make connection with the Driefontein workings 4,000 feet distant, and to do sufficient development work to commence stoping operations; in short, to make a new mine, a period of about seven years would be required.

TWO YEARS' LIFE.

The life of the present mine, as previously mentioned, is scarcely likely to exceed two years, and, therefore, there will be a period of four or five years during which no profits would be earned, and heavy standing and maintenance charges, amounting to not less than £100,000 per annum, would have to be met over and above the direct cost of the scheme. The total amount of direct and indirect charges, apart from provision for debentures and the Government annuity, would certainly not be less than £1,000,000, and might be considerably more if the development results turn out unfavourably. It need hardly be mentioned that the financial position of the company is such that, at least, the whole of this amount would have to be obtained from outside sources. I may state the case concisely by saying that the Southern Areas Scheme entails the borrowing of a minimum of £1,000,000 to open up a new mine of limited area, at a depth greater than has yet been attempted, where the physical features are unfavourable, and where the indications of finding an adequate quantity of payable ore can only be described as unpromising. The only favourable features seem to be the fact that you have a well-equipped plant for treating the ore, and that in one corner of the area, namely, Driefontein, the values of the payable ore are good, that is, about 6½ dwts. Under the circumstances, I felt bound, with great reluctance, to recommend you to abandon the scheme, and the new main shaft and the 26th level crosscut were stopped about the middle of the year.

Universal News by Wireless.

It is now known that the wireless telephone was used by the British aeroplanes for communicating with the artillery in the marvellous work of "spotting" and directing artillery fire. Mr. Campbell Swinton, in his chairman's address to the Royal Society of Arts, also recalls the successful transmission of articulate speech by wireless between the United States and Paris. We are likely, therefore, to hear a great deal more about wireless telegraphy during the next few years. Mr. Swinton sees no reason why, in the near future, a public speaker in New York and London should not directly address, through the wireless telephone, an audience of several thousands scattered over half the globe. He also foreshadows the organisation of a wireless telegraph news service over long distances to a multitude of receiving stations. In wireless telegraphy, he points out, it costs no more to send signals to a thousand receiving stations than to a single one. Thus Lisbon, Rome, Gibraltar, Calcutta, Capetown, Buenos Aires, New York, and many other towns might have their tape machines simultaneously recording messages from London. In this universal distribution of news, rather than in the transmission of private messages, he sees the great field for wireless progress.

PROGRESS ON THE CENTRAL MINING/RAND MINES GROUP.

Modder East Development—Excellent Results of City Deep—Effects of Native Labour Shortage.

CITY DEEP.

The payable reef disclosures at the City Deep during the quarter were as follow:—Main Reef Leader: 820 ft.; width, 30 in.; assay value, 25.7 dwts. The supply of native labour continued to get worse during the quarter, and in consequence the footage of development and tonnage milled are both less than for the previous three months. A slight improvement is now shown in the number of natives coming forward. The development continues to show excellent results.

KNIGHT CENTRAL.

The payable reef disclosures at this mine during the quarter were as follow:—Main Reef: 525 ft.; width, 53 in.; assay value, 10.9 dwts. South Reef: 50 ft.; width, 29 in.; assay value, 20.8 dwts. A lower profit was earned as compared with the previous quarter. This is solely due to the reduced tonnage milled, and has been brought about by the extremely poor supply of native labour, there being a decrease of over 600 natives in the company's service as between the commencement and end of the quarter. Although the current month's results will be adversely affected by the poor labour supply, the position is improving. Both the current rate of yield and the results of the development of the patch of Main Reef between the 16th and 18th levels to the east of the east shaft continue to be satisfactory.

GELDENHUIS DEEP.

The payable reef disclosures during the quarter were as follow:—Main Reef: 351 ft.; width, 38 in.; assay value, 13.5 dwts. Main Reef Leader: 61 ft.; width, 13 in.; assay value, 17.0 dwts. South Reef: 359 ft.; width, 27 in.; assay value, 17.8 dwts. The unsatisfactory results obtained during the quarter are entirely due to the shortage of native labour. During January the labour position commenced to improve, and it is expected that this will continue.

CONSOLIDATED MAIN REEF.

The payable reef disclosures were as follow:—Main Reef Leader: 945 ft.; width, 8 in.; assay value, 52.3 dwts. South Reef: 110 ft.; width, 10 in.; assay value, 26.3 dwts. The profit (£16,041) is much smaller than that earned during the previous quarter, due entirely to the great scarcity of native labour. The yield per ton has shown a satisfactory improvement, but it has not been sufficient to offset the decrease in the tonnage crushed and the increase in the working costs.

MODDERFONTEIN EAST.

Of the quarter's development footage the payable portion of 896 feet averaged 24.4 dwts. over 19 inches, whilst of the development to date the payable portion of 3,127 feet has averaged 30 dwts. over 16 inches. The drive from Modderfontein B. continued in faulted ground, and no conclusive results were obtained. Operations at this point are temporarily suspended. No. 2 Shaft: An open fissure was intersected in the shaft at a depth of 900 feet, with a flow of water amounting to a quarter of a million gallons per day. A pump chamber was cut at 890 feet, the heavy ground timbered, and additional pumps and columns installed. Sinking was resumed towards the end of the quarter, when the shaft had reached a depth of 937 feet. No. 3 Shaft: Drives north and south were set out at a depth of 790 feet (the horizon of the 8th level), and driven for 98 and 183 feet respectively. Diamond drilling indicates the existence of reef 50 feet ahead of the southern drive. On the north, the extent of the dyke was tested by further diamond drilling. The shaft was walled for 133 feet, completing the work from top to bottom, and development will be shortly resumed. The hoisting arrangements, which hitherto have been entirely for the purpose of sinking, are being converted to cages running in balance on rope guides. During the first half of the quarter the severe

epidemic of influenza caused a serious disorganisation of the whole work of the mine. Since then the shortage of labour resulting therefrom has prevented an increase in development. The white labour force averaged 166 men, and the average number of natives employed 889. The financing of the company is still receiving the attention of the directors. The expenditure for the quarter amounted to £60,850.

BANTJES CONSOLIDATED MINES.

The development work done during the quarter was as follows:—Total footage, 140 feet; total footage sampled on reef, 50 ft. The payable reef disclosures were as follows:—Main Reef Leader, 50 ft., width 32 ins., assay value 8.7 dwts. Ore received from mine, 45,937 tons; ore received from surface clean up, 1,800 tons; waste sorted out, 2.0 per cent.; tonnage crushed, 46,280 tons; number of stamps operating, 90; number of tube mills operating, 3. Value of ore before crushing (reflected by mill yield and value of pulp): Mill yield per ton, 3.600 dwts.; assay value of pulp, 2.760 dwts.; total, 6.360 dwts.; total yield, 14,656 fine ozs.; total yield per ton, 6.333 dwts. In pursuance of the closing down policy advised to shareholders in the last quarterly report, the breaking of rock in the mine was discontinued on the 30th November, all shaft sinking and development being stopped during the same month. Since then a thorough clean-up of the underground workings and surface accumulations has been made, the broken rock, sweepings, and surface accumulations being treated in the reduction works. These operations have resulted in a profit which it is expected will be further added to for the month of January and possibly thereafter in connection with the final clean-up of the reduction works. All useful material has been withdrawn from the mine. A departmental enquiry was made by the Government Mining Engineer into the closing down of the company, and a report was published in the Union Government *Gazette* of 20th December last for general information. The concluding paragraph of the report states as follows:—"We consider that the policy adopted by the company of conserving its resources with the object of exploring its ground and of resuming mining operations to better advantage at some later date in preference to exhausting them at a very small profit, or possibly no profit at all, to be the correct one and the one likely to be more beneficial to both shareholders and the State."

ROSE DEEP.

Development work: Total footage, 1,541 ft.; total footage sampled on reef, 711 ft. The payable reef disclosures were as follows:—Main Reef, 99 ft., width 56 ins., assay value 6.6 dwts.; Main Reef Leader, 136 ft., width 17 ins., assay value 9.5 dwts.; South Reef, 230 ft., width 35 ins., assay value 10.7 dwts. Reduction works: Ore received from mine, 153,639 tons; waste sorted out, 8.9 per cent.; tonnage crushed, 140,000 tons; number of stamps operating, 300; number of tube mills operating, 7. Value of ore before crushing (reflected by mill yield and value of pulp): Mill yield per ton, 3.469 dwts.; assay value of pulp, 2.042; total, 5.511 dwts.; total yield, 37,757 fine ozs.; total yield per ton, 5.394 dwts. The small profit earned is entirely due to scarcity of native labour, which has been brought about by the recent influenza epidemic. Working expenditure and revenue account: Working expenses at mine, £131,580, or 19s. 3d. per ton milled; general expenses, head office, £4,474, or 7d. per ton milled; total working expenditure, £139,054, or 19s. 10d. per ton milled; working profit, £18,085, or 2s. 7d. per ton milled.

VILLAGE DEEP.

Development work: Total footage, 4,558 ft.; total footage sampled on reef, 4,635 ft. The payable reef disclosures were as follows: Main Reef Leader, 2,682 ft., width 29 ins., assay value 19.1 dwts. Reduction works: Ore received from mine, 136,631 tons; waste sorted out, 7.9 per cent.; tonnage

crushed, 125,900 tons; number of stamps operating, 180; number of tube mills operating, 7. Value of ore before crushing (reflected by mill yield and value of pulp): Mill yield per ton, 4.535 dwts.; assay value of pulp, 2.410 dwts.; total, 6.945 dwts.; total yield, 41,487 fine ozs.; total yield per ton, 6.590 dwts. The influenza epidemic together with acute shortage of native labour disorganised working conditions to such an extent that operations resulted in a loss for October and November. The position improved somewhat in December; the net result for the quarter was, however, a loss of £916. Development operations were well maintained. Since the close of the year the native labour supply has slightly improved. The directors regret to report that in the circumstances it was decided not to declare a dividend for the half-year ended 31st December, 1918. Working expenditure and revenue account: Working expenses at mine, £169,048, or £1 6s. 10d. per ton milled; general expenses, head office, £4,165, or 8d. per ton milled; total working expenditure, £173,213, or £1 7s. 6d. per ton milled.

CROWN MINES.

The payable reef disclosures at the Crown Mines during the quarter were as follows:—Main Reef Leader, 2,330 ft., width 17 ins., assay value 37.9 dwts.; South Reef, 950 ft., width 28 ins., assay value 16.2 dwts. Owing to the influenza epidemic and the shortage of native labour, the tonnage output showed a further reduction of 67,000 tons as compared with September quarter, and on this account working costs rose 1s. 10d. per ton milled. The yield was slightly higher, but the reduction in the scale of operations brought the profit down to £68,587, or £47,877 less than for the preceding period. No. 15 shaft was sunk 606 feet to a total depth of 925 feet, No. 14a 88 feet to a depth of 243 feet, and No. 5a shaft was commenced and sunk 12 feet. Reef disclosures continue satisfactory. The native labour force at the end of the quarter was 12,432, as compared with 12,673 at the end of September, 1918.

NOURSE MINES.

The payable reef disclosures during the quarter were as follows:—Main Reef Leader, 730 ft., width 14 ins., assay value 22.6 dwts.; South Reef, 400 ft., width 19 ins., assay value 13.9 dwts. Mining operations were so seriously affected by the influenza epidemic and the extreme shortage of native labour following thereon that a loss of £6,317 was incurred on the quarter's working results. The yield showed improvement, but working costs were abnormally high on account of the reduced tonnage output.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of January of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs	Total Profit
Simmer and Jack ...	320	7	44,100	11,549	£4,001
Robinson Deep ...	80	6	35,200	12,024	*5,351
Knights Deep ...	400	11	85,300	16,541	453
Simmer Deep ...	220	10	43,300	11,332	*435
Jupiter ...	80	5	26,400	6,570	40
Sub Nigel ...	30	2	9,100	6,156	*7,117
Totals ...	1130	41	243,400	64,172	£5,828

* Loss.

The sundry revenue included in the above total declared profit or loss is as under: Simmer and Jack, £1,500;

Knights Deep, £917; Simmer Deep, £512; Jupiter, £371; Sub Nigel, £12; total, £3,312.

Gold Reserve.—Simmer and Jack, 1,100 ozs.; Sub Nigel, 3,231 ozs.; total, 4,331 ozs.

Latest Company Registrations.

Downak Estate, Ltd., 39 Sauer Street, Johannesburg; capital £550.
The Abantu Distributing Club, Ltd., 19 and 20 Court Chambers, Rissik Street, Johannesburg; capital £100.
Sidick Carim & Company, Ltd., Station Street, Balfour, District Heidelberg; capital £1,500.
The Transvaal Marble Quarries, Ltd., 3 Bureau Street, Pretoria; capital £5,000.
Southern Seas Salvage Company, Ltd., 44 Permanent Buildings, Harrison and Commissioner Streets, Johannesburg; capital £27,500.
I. Oliver, Ltd., 10 Delvers Street, Johannesburg; capital £1,250.
Archd. Taylor & Company, Ltd., 21 and 24 Bettelheim Buildings, corner Fox and Simmonds Streets, Johannesburg; capital £3,000.
Oceanic Importers, Ltd., 4 Adelaide Buildings, Eloff Street, Johannesburg; capital £6,000.
Cassim Essop, Ltd., 103 Main Road, Fordsburg; capital £500.
The Modder West Gold Mining Company, Ltd., 6 and 7 Rufe Naylor's Buildings, Eloff Street, Johannesburg; capital £200,000.
Atlantic Agencies, Ltd., 12 Southern Life Buildings, Main Street, Johannesburg; capital £5,000.
Malvern Vice Company, Ltd., 287 St. Andries Street, Pretoria; capital £250.
Jacobs, Sons & Company, Ltd., 147 President Street, Johannesburg; capital £75,000.
The Edward Osborne Company, Ltd., Monument Street, Klerksdorp; capital £1,000.
The Union Shire Agency and Investment, Ltd., 39 Portland House, Johannesburg; capital £1,000.
Drieftein Plantations, Ltd., 237 Pretorius Street, Pretoria; capital £2,500.
The Union Warehouse Company, Ltd., 18 and 18a Pritchard Street, Johannesburg; capital £2,000.
The Great Northern Ranches, Ltd., 90-94 Exploration Buildings, Commissioner Street, Johannesburg; capital £12,000.
The National Jewellery and Optical Company, Ltd., 4 Burchmore's Buildings, corner Fox and Rissik Streets, Johannesburg; capital £50,000.
Lebombo Ranch, Ltd., Mosenthal's Buildings, Market Street, Johannesburg; capital £15,000.
George Cradock & Company (South Africa), Ltd., 75-77 Cullinan Buildings, corner Simmonds and Marshall Streets, Johannesburg; capital £15,000.
Fraser & Chalmers (S.A.), Ltd., Farrar Buildings, Simmonds Street, Johannesburg; capital £250,000.
Rusul & Abdoola, Ltd., 544 corner De la Rey and Seventeenth Streets, Vrededorp; capital £50.
M. G. Hussen & Company, Ltd., 185 Market Street, Johannesburg; capital £1,000.
Dowdeswells Motor Garage, Ltd., Green's Buildings, Commissioner Street, Johannesburg; capital £5,000.
T. W. Beckett & Company (Cape), Ltd., 29 Church Square, Pretoria; capital £1,000.
The Transvaal Timber and Iron Company, Ltd., 140 Bree Street, Newtown, Johannesburg; capital £15,000.
Anglo-Scandian Trading Company (Africa), Ltd., 38 Consolidated Buildings, corner Fox and Harrison Streets, Johannesburg; capital £100,000.

FOREIGN COMPANIES.

R. W. Everett, Ltd., care H. S. Everett, 24-33-34 Beckett's Buildings, President Street, Johannesburg; capital £5,000.
Nestlé & Anglo-Swiss Condensed Milk Company (Africa), Ltd., care R. A. Simpson, United Provident Building, New North Street, Government Square, Johannesburg; capital £25,000.

CHANGE OF NAME.

The Michelson Schaverien Company, Ltd., changed to Michelson Company, Ltd., Boksburg.

PROSPECTUS.

Modder West Gold Mining Company, Ltd., Johannesburg.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

The British and Canadian Hydraulic Tube Company, Ltd., Johannesburg; increase of capital.
Jays, Ltd., Johannesburg; increase of capital.
Mauss Continuous Centrifugal Separator, Ltd., Johannesburg; change of name.
Maritzburg Motor Marts, Ltd., Johannesburg; alteration of articles.
Premier Box and Trunk Manufacturers, Ltd., Johannesburg; alteration of articles.
Pyramids Diamond Works, Ltd., Pretoria; alteration of articles.
Jays, Ltd., Johannesburg; alteration of articles.

NOTICES OF INCREASE OF CAPITAL.

British and Canadian Hydraulic Tube Company, Ltd., Johannesburg; increased from £1,500 to £25,000.
Jays, Ltd., Johannesburg; increased from £600 to £10,000.
Wellington Bacon and Provisions Factory, Ltd., Johannesburg; increased from £25,000 to £35,000.
Geduld Proprietary Mines, Ltd., Johannesburg; increased from £970,000 to £1,009,826.
Italian Warehouse, Ltd., Johannesburg; increased from £7,000 to £20,000.
Johnston's, Ltd., Pretoria; increased from £40,000 to £50,000.
South African Rubber Manufacturing and Tyre Company, Ltd., Johannesburg; increased from £12,000 to £100,000.

COMPANIES IN LIQUIDATION.

Pretoria Estate and Market Company, Ltd., Pretoria; capital £150,000.
United Jack Gold Mining Company, Ltd., Pretoria; capital £65,000.
Cereal Products, Ltd., Johannesburg; capital £1,000.

LATEST FROM UNION CORPORATION GROUP.

Improved Yield at Geduld and Modder Deep.—More Labour for the Princess.

GEDULD PROPRIETARY MINES, LTD.

THE Geduld directors' report for the quarter ended 31st December, 1918, show that the shaft sinking done was 629 feet. Development—Total footage, 3,791; total footage sampled on reef, 3,320. The payable reef disclosures were—1,010 feet, having an assay value of 16·6 dwts. over 34 inches. The registered capital of the company has been further increased to £1,150,000 and the issued capital to £1,147,166. As intimated through the Press the offer of new shares to French shareholders had to remain open until the 8th ult., consequently the payment of a dividend had to be postponed in respect of the profits for the six months to the 31st December last. On the 28th ult. Dividend No. 9 of 6¼ per cent. (1/3 per share) amounting to £71,697 17s. 6d. was declared payable to shareholders registered in the books of the company on the 14th February, 1919, and to shareholders who have subscribed by that date to the recent issue of new shares. Warrants in payment of this Dividend will be despatched to registered shareholders, except those resident in the territories of enemies, as early as possible. The Consulting Engineer estimates that at the 31st December, 1918, there were developed 2,510,000 tons having an average assay value of 7·5 dwts. over a stoping width of 61 inches. This compares with 2,200,000 tons of a similar assay value and stoping width at the end of the previous year.

Comparison of Results.—Tons milled: September, 1918, Quarter, 134,600; December, 1918, Quarter, 125,000—decrease, 9,600 tons. Working Profit: September, 1918, Quarter, £58,661; December, 1918, Quarter, £57,469—decrease, £1,192. Working Costs per Ton Milled: September, 1918, Quarter, 20s. 2·7d.; December, 1918, Quarter, 20s. 3·5d.—increase, 0·8d. Yield per Ton Milled: September, 1918, Quarter, 28s. 11·3d.; December, 1918, Quarter, 29s. 5·8d.—increase, 6·5d.

THE MODDERFONTEIN DEEP LEVELS, LTD.

The directors' report for the Quarter ended 31st December, 1918, shows that the total footage in mine development was 1,390; total footage sampled on reef, 970. The payable reef disclosures were—960 feet, having an assay value of 16·0 dwts. over 48 inches. Dividend No. 8 of 50 per cent. (10/- per share) on the issued capital of the company, amounting to £250,000, was declared on the 20th December, 1918, payable to shareholders registered in the books of the company on the 31st December, 1918. Warrants in payment of this dividend will be despatched to registered shareholders, except those resident in the territories of enemies, on the 8th February. No expenditure on capital account was incurred during the quarter. The expenditure incurred during the quarter on development amounted to £6,961 8s. 6d., whereas the fixed charge to working costs of 1s. per ton milled gives £6,200. The Consulting Engineer estimates that at the 31st December, 1918, there were developed 3,450,000 tons having an average assay value of 8·8 dwts. over a stoping width of 78 inches. This compares with 3,320,000 tons averaging 8·7

dwts. over a stoping width of 78 inches at the end of the previous year. Comparison of Results.—Tons Milled: September, 1918, Quarter, 129,500; December, 1918, Quarter, 124,000—decrease, 5,500 tons. Working Profit: September, 1918, Quarter, £145,080; December, 1918, Quarter, £145,092—increase, £12. Working Costs per Ton Milled: September, 1918, Quarter, 17s. 7·6d.; December, 1918, Quarter, 17s. 8·2d.—increase, 0·6d. Yield per Ton Milled: September, 1918, Quarter, 40s. 0·5d.; December, 1918, Quarter, 41s. 1·0d.—increase, 1s. 0·5d.

PRINCESS ESTATE.

The footage sampled at the Princess Estate during the quarter was as follows: South Reef, 135 feet, averaging 9·9 dwts. over 26 inches; Main Reef, 615 feet, averaging 6·8 dwts. over 42 inches. It is estimated that the payable ore (based on the milling width) developed by the above footage is: South Reef, 2,750 tons; Main Reef, 27,240 tons—29,990 tons. These figures are subject to re-calculation at the end of the year, when block values are made out. The results were seriously affected by the outbreak of influenza, work being completely disorganised for the greater part of October. The continued shortage of native labour further adversely affected the results, but the position has improved substantially during the latter half of January, the effects of which should soon be felt. The Consulting Engineer estimates the position at December 31, 1918, as follows:

	Milling tons.	Milling value, dwts.	Milling width, ins.
South Reef	188,000	7·5	28
Main Reef	192,000	6·8	54
Total	380,000	7·2	37

In addition to Shaft pillars 40,000 7·7 26

Comparison of Results.—Tons Milled: September, 1918, Quarter, 55,600; December, 1918, Quarter, 53,500—decrease, 2,100 tons. Working Costs per Ton Milled: September, 1918, Quarter, 29s. 7d.; December, 1918, Quarter, 30s. 1·5d.—increase, 6·5d. Yield per Ton Milled: September, 1918, Quarter, 26s. 3·5d.; December, 1918, Quarter, 23s. 4·6d.—decrease, 2s. 10·9d.

Durban-Roodepoort Gold.

Interim Return of Capital.—The liquidators of the Durban-Roodepoort G.M. Co., Ltd., are in a position to make an interim return on account of capital of 10s. per share, and the same will be paid to holders of registered shares at 22 Leadenhall Buildings, Gracechurch Street, E.C.3, and to holders of share warrants to bearer at the Standard Bank of South Africa, Ltd., 10 Clements Lane, Lombard Street, E.C.4, on and after January 30. Share warrants must be lodged at the Standard Bank of South Africa, Ltd., seven clear days previous to payment.

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NEW SHAFT FOR MODDER B.

To Strike Reef at 1,800 Feet.—Exploitation of Southern and Eastern Sections.—Geduld Co-operating.—January's Improved Profit.

THE sinking of a new shaft on the property of the Modderfontein B Gold Mines, Ltd., has just been decided on, and the technical adviser of the Central Mining and Investment Corporation and the management at the mine are now occupied with a consideration of the preliminary details. Hitherto the whole of the large output of this property has been secured through one comparatively shallow shaft. The development operations have also been based on this shaft, which is known as the Central. The underground workings have now become so extensive and the distances between essential development faces and this Central shaft are so large that a new development policy has to be embarked on for the exploitation of the southern and eastern portion of the mine. Accordingly, it has been decided to sink a new shaft, the more effectively to deal with these portions of the property.

CIRCULAR DESIGN, 20 FT. DIAMETER.

The new shaft has been located to cut the Reef series at an approximate depth of 1,800 feet. The usual sinking practice adopted by mines under the technical control of the Central Mining people will be adopted. The shaft will be circular in design and 20ft. in diameter. The shaft will be located 5,000 feet to the south of the existing Central shaft and about 1,000 feet from the southern boundary of the property.

A very large virgin claim area will be attacked from this point, and with a view to obtaining information as to the

reef conditions in the extreme south-eastern corner of the property (i.e., adjoining the Geduld Property workings) an arrangement has been entered into whereby the Geduld Company will test a portion of the area in question by means of drives. A certain amount of work under this head already has been done and the reef disclosures have been satisfactory.

DEVELOPMENT AND PROFIT.

Development in the more northern or older portion of the mine has recently been carried out on an extensive scale. In the quarter ending with December last 3,635 feet were driven, sunk and risen, and the total footage sampled on Reef was 2,050 feet. The payable Reef disclosures were on Main Reef Leader 938 feet, width 16 inches, assay value 37.1 dwts.

Last month this company earned a working profit of £65,026, as compared with an average monthly gain of £53,800 in the December quarter.

In that latter period the profit was £16,973 less than for the preceding quarter, chiefly owing to a reduction in yield of 1s. 2d. per ton, and an increase in working costs of 1s. 3d. per ton milled. The yield of this company which has been relatively low since the middle of last year has improved and the latest statement as to tonnage milled (58,000 tons in January) shows improvement. Costs in January were 21s. 7d. per ton.

Giant Mines of Rhodesia.

The report of the Giant Mines of Rhodesia for the year ended 30th June states that no work has been done in the mine during the year, but advantage has been taken of the high prices ruling for second-hand machinery to dispose of a large quantity of the plant, which on the whole realised satisfactory prices. There still remains a certain quantity of machinery, tools, equipment and stores to dispose of. The result of operations is a profit of £5,678, mainly derived from interest on loans and investments; £1,557 was brought forward and £9,828 transferred from the reserve created out of profits in past years to meet the dividend paid in January last, the total at credit of profit and loss being £9,693. Deducting income tax £1,746, there is left £7,947 to be carried forward. Cam-Good Shepherd.—The company's interest in this property has been sold to the Cam and Motor Gold Mining Company for a share consideration.

Oil Shale Development.

An important development in connection with the Scottish oil industry is the new pipe laid, just opened, across the neck of Scotland through which oil fuel can be pumped in a cold state at the rate of about 100 tons per hour. The pipes follow the course of the Clyde and Forth Canal, the starting point being at Old Kilpatrick and the terminal at Grangemouth. At the one end sixteen huge tanks have been constructed, each with a holding capacity of 8,000 tons; at the other end the oil falls into spacious reservoirs, easily accessible to the Fleet from its base at Rosyth. The pipe is 8 ins. in diameter, and there are two intermediate pumping stations. It is claimed for the line that it is the longest of its kind in Europe. The scheme, which will probably be followed by important developments having as their object the maintenance by Great Britain of a large reserve of petrol, owes its inception to the enterprise and foresight of the British Petroleum Executive which a year or two ago was organised by Mr. Walter Long, with Sir John Cadman as its director, to take charge of all matters relating to petroleum. The Scottish shale industry has an output of 3½ million tons per annum, from which 70,000 gallons of crude oil are extracted, in addition to 60,000 tons of ammonia. Ten thousand workpeople were employed in the mines, and it is estimated that at the present rate of output there is sufficient shale to last for at least a hundred years.

British Central Africa Co.

The report of the British Central Africa Company for the year 1917 shows a profit of £87,120, and £13,774 was brought forward, making £100,894. The board has applied £52,500 in writing down the second debentures of the Shire Highlands Railway to 70 per cent., £12,445 in writing down preference shares of the Central Africa Railway from 20s. to 15s., and placing £10,000 to a reserve for contingencies, the balance of £25,949 being carried forward. The board had not received the final instalment of £15,800 from the Nyasaland Government on account of subsidy lands at the date of the accounts, but it has since been paid. The cotton and tobacco crops were very satisfactory, and as far as they had been realised good prices were obtained. The difficulty in obtaining tonnage has somewhat diminished. The store trade produced good results and the flotilla has been profitably worked.

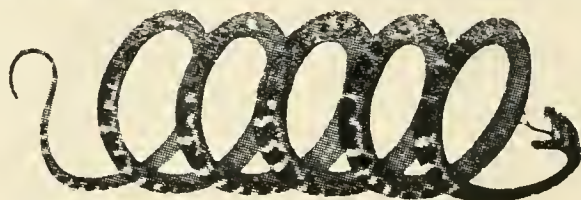
Koffyfontein Mines.

The annual meeting of the shareholders of the Koffyfontein Mines, Ltd., was held at the head offices of the company at Kimberley, Mr. Hirschhorn presiding. In moving the adoption of the directors' report and balance sheet for the year, the chairman referred to the satisfactory termination of hostilities and the victory of the Allied arms. Dealing with the figures for the twelve months, he said the working for the year had resulted in a profit of £57,291 being carried to the appropriation account, which, with the balance of £63,761, gave a total of £121,053. After allowing for last year's dividend and the formation of the blue ground reserve account of £70,000, and providing for the Union Government taxation, an unappropriated balance of £24,633 remained, out of which it was proposed to pay a dividend of 7½ per cent., less the Union dividend tax. He also made sympathetic reference to the losses of employees sustained by the company during the recent epidemic and to the good work done by the general manager and staff in combating the disease. In conclusion, he foreshadowed an early resumption of hauling operations. Mr. R. Philipson Stow seconded, and the report was unanimously adopted. A dividend of 7½ per cent. subject to the Union dividend tax, was declared. The retiring directors and auditors were re-elected.

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Grade.	Material.	Microhms per Cubic c.m.	Ohms per Square Mil. Foot.
CHRONIC ..	NICKEL CHROME ..	93.5	441.7
FERROZOID ..	NI-STEEL ..	84	397
FERRY ..	COPPER-NICKEL ..	47.2	223
TARNAC ..	CUPRO-MANGANESE	41	193.7
B.B. ..	30% GERMAN SILVER	40.2	189.9
ZODIAC ..	SPECIAL GERMAN SILVER	36	170
No. 1 ..	GERMAN SILVER ..	29	137
No. 3 ..	GERMAN SILVER ..	23.5	111
No. 4 ..	GERMAN SILVER ..	21	99.2
No. 5 ..	GERMAN SILVER ..	18	85
NICKEL ..	PURE NICKEL ..	9.6	45.3
CUPRO ..	COPPER-NICKEL ..	26.4	12.5
COPPER ..		1.561	7.38

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SOUTH AFRICA AND KING COAL.—II.

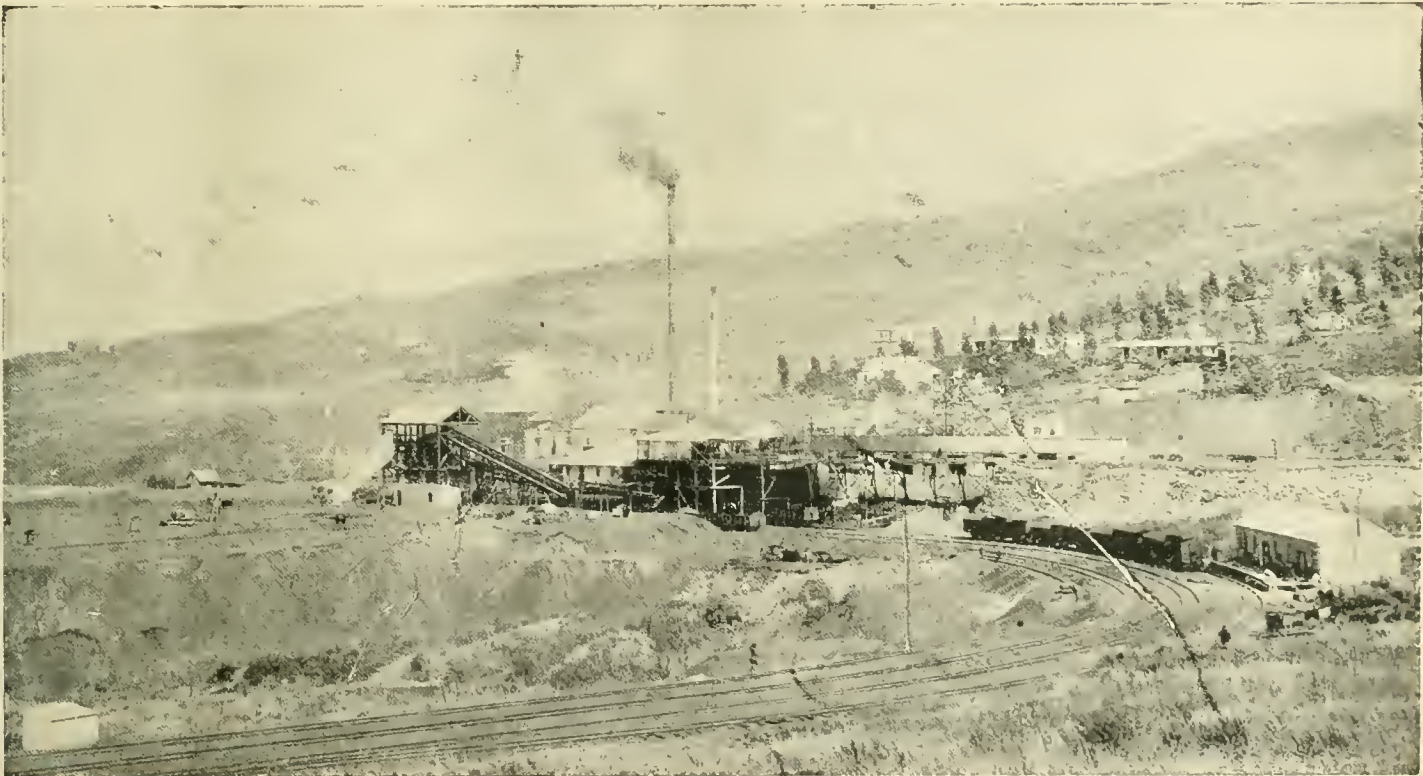
Natal's Great Advance—The Case for the Transvaal—Immense Possibilities of the By-Product Trade—A Huge Field for Employment—Five Thousand Miles of Coal and 1,580 White Workers—An Economic Fact that Suggests a Solution of Many Problems.

In a previous article we sought to demonstrate the immensity of the Union's Coal Resources, and referred to the large markets which are awaiting exploitation. The possession of an extended sea-board and its effect on the building up of a large export trade were dealt with, and the Government's tardy action in regard to supplying a sufficiency of rolling stock was criticised. We sought to prove that in no other country could coal buyers obtain such good value for their money as in South Africa, and yet the coal industry of the Union has, so far, been set on a plane of importance not much greater than that of our scattered copper mines.

Only in Natal has the value of South African coal measures been appreciated at its true worth and the importance of the export trade realised. Obviously, the Garden Colony has in the possession of the Port of Durban an advantage which has not hitherto been enjoyed by the Transvaal. The favourable position of the natural gateway of the Transvaal—Delagoa Bay—in relation to the situation of the Middelburg Coal Field causes one to wonder whether the Transvaal Coal Fields have made the most of their opportunities, and whether the Government has not neglected a great deal of

TRANSVAAL.				
Period.		Tons sold.	Value at Pit's mouth. £	Value per ton. s. d.
Year 1912	...	4,751,850	1,044,986	4 478
Year 1913	...	5,225,036	1,142,598	4 448
Year 1914	...	5,157,268	1,150,746	4 555
Year 1915	...	5,202,805	1,145,060	4 482
Year 1916	...	6,136,913	1,382,680	4 607
Year 1917	...	6,641,229	1,586,062	4 932
Dec., 1918	...	508,406	128,952	5 087

NATAL.				
Period.		Tons sold.	Value at Pit's mouth. £	Value per ton. s. d.
Year 1912	...	2,765,068	771,755	5 699
Year 1913	...	2,898,726	891,699	6 183
Year 1914	...	2,567,817	885,919	6 1080
Year 1915	...	2,304,116	782,464	6 950
Year 1916	...	3,066,261	1,134,194	7 477
Year 1917	...	2,890,296	1,466,304	10 176
Dec., 1918	...	219,510	117,061	10 799



trade by not affording the Transvaal mines additional facilities for the augmentation of an export trade based on the Witbank-Middelburg area.

WHAT NATAL HAS DONE.

The advance of Natal's coal trade in the last few years may well be considered in relation to this subject. In 1911 Natal sold 2,679,551 tons of coal for a value of £725,448, or 5s. 5d. per ton. In the same year the Transvaal sold 4,343,680 tons for £1,020,539, or 4s. 8d. per ton. In other words, the Garden Colony was obtaining only 9d. per ton more for its production than the inland province. Figures for the two Provinces since that year are set out hereunder. They certainly afford interesting comparisons:—

It will be observed from the above that the value of the Natal output has been doubled in the last seven years, although the actual production in terms of tonnage is but little larger at the present time than it was in 1911. The result has been brought about by a 100 per cent. rise in the price of the product. Natal coal, which in 1911 was fetching 5s. 5d. per ton, is now fetching practically twice as much, viz., 10s. 8d. per ton. On the other hand, the Transvaal is only obtaining a few pence per ton more for its coal at the present time than it was in 1911. The increase in the gross value of the production has been brought about by increasing the quantity of coal mined.

THE SIGN-POST TO PROSPERITY.

The figures given above clearly indicate the road to prosperity for our Colonies. The Natal coal industry is most prosperous to-day. The average profits per ton of coal are larger than the average profits per ton secured by the great majority of the mines of the Rand from gold ore last year.

This has been achieved by the fostering of the export trade. The Admiralty has given freely of its generous patronage to the Natal Coal Fields, and, although it is not our intention to enter here into a discussion of the relative calorific values of Natal and Transvaal production, we can at least express the opinion that Natal coal is not twice as good as the Transvaal production, and that the great increase in the value of Natal production has been brought about by nothing else than by the fostering of the export trade.

It seems to us that the Transvaal has been particularly lax in regard to its coal fields. It needs no mass of statistics to prove that the local market for coal is not a very large or expansive one. We must look to countries which lie beyond our borders for any large extension of the volume of Transvaal coal trade, and for any substantial appreciation in the selling value of our product. The Argentine, for instance, consumes about six million tons per annum and paid, in wartime, £8 per ton for it.

And in this connection we would repeat what we said last week: we should look not only to the Indian Ocean, but also to the extension of our Atlantic Ocean sea-board for expansion of our output. We hope that Sir William Hoy, who is now in Europe, will arrange for a very considerable increase to the complement of our war-weary rolling stock, without which the full promise of our coal trade never can be realised.

THE BY-PRODUCT TRADE.

Natal has not only beaten us in the race for coal export trade: it is clear that the Garden Colony is going to capture the by-product market as well unless the Transvaal bestir itself. The by-products of coal (as was indicated in a diagram published in this journal a few weeks ago) offer vast opportunities to industry. Before the war a great proportion of the Coal By-Product trade of the world was in the hands of Germany, particularly in the direction of aniline dyes, and there is no earthly reason why South Africa should not have its share of the great bulk of the late German trade, for which bold bids are now being made by British coal owners. In Natal preparations are being made for the production of sulphate of ammonia and other by-products on a very large scale, but in the Transvaal the possibilities of the by-product trade do not appear to be appreciated.

It is, however, encouraging to note that the Witbank Colliery Company is about to resume the production of tar, for which there is a large demand, and for which the company's product is very suitable. The Tweefontein United Collieries are also tackling the question on serious lines, and have in view the installation of an improved Mond system treatment plant for the production of sulphate of ammonia.

A CENTRAL WITBANK PLANT.

Witbank might well become the centre of a large by-product industry. Cheap coal means cheap by-products, and it would not require much of a fillip on the part of the Coal Owners' Association and the Government to ensure a really large undertaking in the Middelburg-Witbank district.

A great proportion of the small coal in this area has not been utilised at all, and is lying dumped on the collieries. It is estimated that something like six million tons of small coal containing volatile products, equal to over 30 gallons per ton, are lying fallow within half a dozen miles of Witbank Station.

A combined plant capable of treating, say, 100,000 tons per month, and of dealing with volatile products and also sulphate of ammonia, would be a tremendous asset to this country. Not only would it enable the collieries to increase their profits by 50 per cent. or more on the same tonnage that is being won to-day; the production of local sulphate of ammonia on a large scale would find a ready market in agriculture and would stimulate that great industry. This is certainly a matter for the Government of the Union to

take up in a serious and thorough manner, and to co-operate with the colliery interests in the directions indicated.

The Transvaal Fields have immense resources and a great deal of coal which is now being wasted is peculiarly suitable for the making of by-products. Better facilities for export through Delagoa and via the South-West sea-board, more rolling stock and central by-product plants coupled with close and sympathetic co-operation between Government and colliery owners are required to enable our collieries to take their proper place in industry.

Granted these requirements we have no hesitation in predicting that coal in the space of a few years would become the second mineral industry of the country from the point of view of value of output. In other words, South African coal and its by-products, which last year represented a value of three and a quarter millions, would, in our estimate, speedily exceed the value of our diamond production which last year was just under seven millions.

THE EMPLOYMENT QUESTION.

Increased production will necessarily mean an increase in the number of workers employed. This is a further aspect of the subject under review which should make a strong appeal not only to the Government but to all mining interests. We have urgent need in this country of broadening the avenues of employment, particularly at present when South Africa in common with most other countries is settling down to a serious consideration of the problems of reconstruction, and those difficult phases of industry and sociology which are the inevitable aftermath of the great war. During the coming months it will take all our industrial statesman-craft to find work for the men who have fought and are returning to seek the natural heritage bequeathed them by the war—employment, and not a specious form of State-aided charity. We must, too, find work for the men who will be displaced by the returning soldiers. It is most necessary for the country to do this if we are to hold the industrial peace and are not to foster the elements of Bolshevism. And what are the prospects? They are certainly not too roseate in so far as the Gold Mines, with their low grade problems and their large burdens of direct and indirect war taxation, are concerned. It is certain that in time there will be immense expansion on the Further East Rand. But the development of large gold mines, and particularly deep level gold mines, takes time—and plenty of it. Until the productive stage is reached the scope for employment is restricted. Similarly in regard to diamonds, the field is limited because the gem-producing industry has to be kept within the bounds of a comparatively restricted market.

A SOLUTION OF PROBLEMS INDICATED.

But in the direction of exploiting the thirty thousand million tons of our coal resources, there is an unbounded field for prosperity and work which we have never yet drawn on. Coal mines require no deep or costly development to reach productivity. Neither do they require very costly surface installations. Moreover, the selling price of the product is not at all likely to depreciate even if we quadruple production by developing the export trade and stimulating the by-product industry as Natal is doing. In actual fact what is the position in regard to the volume of employment on our coal fields? We find that according to the Government returns for December there were employed on all the coal mines of the Union 1,593 white men—1,580 on producing and 13 on non-producing coal mines. The area of the Union's coal fields has been estimated by the Government Mining Engineer at five thousand square miles. This means that the white employees per square mile work out at only .32, or in other words, for every 100 square miles of coal field we find employment for only 32 white men!

We submit that this is a basic economic fact which is worthy of the careful consideration of our legislators and captains of industry. It is a statistical truth which points the way towards a solution of many of our present troubles, and indicates the road to great industrial expansion without excessive capital charges.

REPORT OF THE AMERICAN GOLD COMMITTEE.

Summary of Findings.—Examination of Various Suggestions to Stimulate Output.—Relief Measures Recommended. Conclusions Agree with Those of Inchcape Report.

THE findings of the Committee appointed in July, 1918, by the Secretary of the Interior to investigate the gold mining situation in the United States, consisting of Messrs. Hennen Jennings (chairman), J. H. Mackenzie and Charles Janin, of the Bureau of Mines, and H. D. McCaskey and F. L. Ransome, of the United States Geological Survey, are set forth in a lengthy report, which has reached us.

The status of the industry and the conclusions and recommendations of the Committee, as presented therein, may be briefly summarised as follows:—

WHAT THE FIGURES SHOW.

Statistics of production dating from the discovery of America in 1492 show that the annual average output was small until 1850, when the discovery of gold in California and Australia marked the beginning of the great gold output. The figures show a slight decline from 1855 to the opening of the mines in the Transvaal in 1887; then there was a very large increase in the yearly output until 1910, since which date there have been irregular fluctuations until 1915, when a serious decline took place. Though the increase in the output of gold has been rapid during the past 25 years, it has not kept pace with the outputs of coal, iron, copper or petroleum, or the rapid growth of bank deposits.

SUFFICIENT GOLD RESERVE ESSENTIAL.

The present decrease in gold production demands serious consideration as the maintenance of a sufficient gold reserve is essential to the security of our national finances and credits. The United States is at present the most favoured nation in regard to gold reserves, holding over three billion dollars, or more than one-third of the gold stock of the world, but it has contracted debts on a gold basis many times that existing before the war.

CAUSES OF THE DECREASED OUTPUT.

The principal causes of the decline in gold mining in this country are the shortage of labour and higher wages caused by the war, lower efficiency of available labour, the great increase in the cost of supplies, and the higher cost of power. In addition, the depletion of certain deposits and the lower grade of ore mined in others have tended to reduce outputs.

THE GOLD STANDARD.

Bankers and political economists nearly all agree that the gold standard should be maintained in principle. The war has resulted in transferring the United States from a debtor into a great creditor nation. Since the outbreak of the war, prices of all commodities have increased greatly except that of gold, which as the standard of value is fixed at 20.67 dollars per ounce. Thus the purchasing power of gold has decreased while the prices of other commodities have increased. The great increase in the cost of gold mining has tended to discourage new enterprises and curtail existing operations. Many mines have been compelled to close and await more favourable conditions. Those mines that have continued operations have been able to do so only by practicing the most rigid economies and by the curtailment of development work. The average operating cost of producing a dollar's worth of gold at the large and most favoured quartz mines in 1917 was 70 cents as compared with 57 cents for 1915. Gold mining under present conditions offers little inducement to capital.

SUGGESTIONS FOR STIMULATING PRODUCTION.

Various means of stimulating the production of gold in the United States have been proposed. The committee reports on them as follows:—

Payment by the Government of a bonus on newly-mined gold has many advocates. The Committee does not believe the adoption of a bonus system would be beneficial at this time.

The United States employment Service can, if properly authorised be of great help in diverting labour to the gold industry. Gold mining has been officially declared an essential industry, and in the opinion of the majority of the Committee should rank in this respect with other preferred industries. Exemption from draft and deferred classification of gold labour has already been granted to a certain extent by the War Department.

The furnishing of supplies to gold mines at pre-war or cut prices does not seem to be feasible.

The elimination of the excess profits tax on gold mining, and the encouragement of a maximum output thereby, might result in larger revenues than with the tax standing, as larger dividends paid to shareholders would mean greater revenue for general taxation. As the profits of a gold mine, no matter how large, cannot be ascribed to war conditions, but on the contrary are diminished by them, the remission of this tax is just and logical.

Gold mining as an essential industry, is entitled to preferred classification for railroad freight, etc., and should receive the benefit of any modification of freight rates granted any other preferred industry.

When electric power is used gold mines should have a high class rating with regard to power consumption, and power should be curtailed only when necessary.

The privilege of free export and of sale to manufacturers would stimulate production and aid gold mining, and also might be a safeguard against inflation.

The Committee suggests that gold and other mining companies might properly be required by law to furnish to the Government, with such frequency, as may be desirable, statistics of their costs, production, and profits, and these should be available for publication.

The Government should, through the Bureau of Mines, assist in improving methods of mining and metallurgy of gold ores, particularly in the treatment of complex and low-grade ores. A wide field of work is presented here.

Some aid in reducing costs might be obtained by co-operative buying of supplies by mining companies through central agencies in each State or district, but the organisation of a general system of co-operative buying would be very difficult.

Possible methods of maintaining the visible gold reserve, apart from mine production are: (1) The curtailment of the use of gold for manufactures, and (2) making a call on the public to turn in hoarded gold. In France, voluntary contributions by the populace since the war began have amounted to more than two billion francs.

Further relief might be obtained by amending the War Minerals Bill to include gold and voting an appropriation to be used in directing the search for new deposits.

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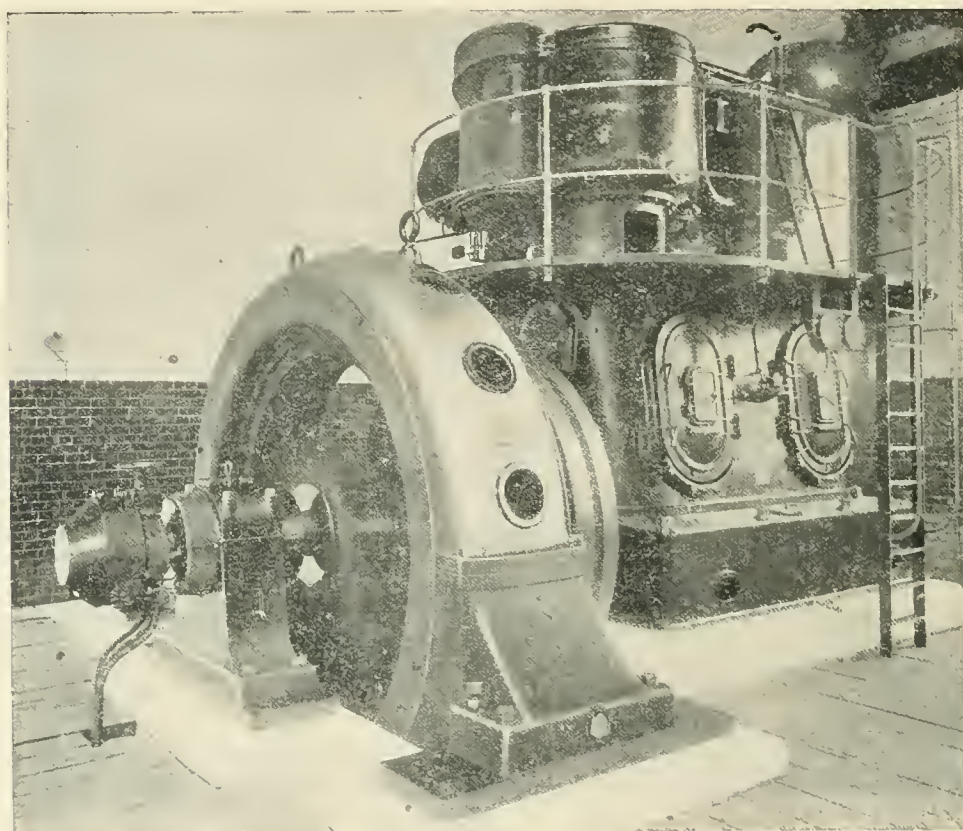
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CURRENCY AND RECONSTRUCTION PROBLEMS.

Suggestions for Financing Trade and Enterprise After the War—How Credit Conditions Have Changed—New Joint Stock Issues to be Restricted—More Points from the Vassar-Smith Report.

THE Report of the Committee on the Provision of Financial Facilities for Trade after the War, appointed jointly by the Chancellor of the Exchequer and the Minister of Reconstruction in November, 1917, under the chairmanship of Sir Richard D. Vassar-Smith, of Lloyd's Bank, has just been published by the Ministry of Reconstruction. It begins by expressing the emphatic opinion that the primary factor in repairing the wastage of capital caused by the war lies mainly in increased production and actual saving. Discussing the financial requirements of industry after the war the Committee foresee: (a) A considerably more than normal demand for working capital owing to the higher cost of labour and materials, the necessity for giving longer credit, and the anticipated expansion in the volume of trade due to the fact that the basis for potential commercial output, as compared with pre-war output, has been very greatly enlarged during the war by the extension of existing works, and the building of a very large number of absolutely new ones. (b) A greater than normal demand for extended credits for the purpose of replacing at higher cost machinery and plant which has fallen into disrepair. (c) Demands in connection with the reconversion of plant and works. These, in many cases, may be on the border line between working credit facilities and new capital requirements. (d) New fixed capital requirements for extensions or new works.

The Committee point out that the ability of industry to cope with these unusual financial problems during the reconstruction period will be most limited in the case of entirely new firms which have come into existence owing to the demand for war material. They have been urged strongly that it was not in the national interest to allow these firms to peter out, and that every inducement should be given them to continue in business even to the extent if necessary, of granting State financial assistance. The Committee expresses the opinion that it might be regarded as unjust to enable such firms by means of State aid to compete with old-established firms in the same industries, and also that it would be very difficult, if not impossible, to guard against wastefulness and inefficient management. The solution in these cases appears to them to lie in the establishment of new industries, the capital for which should be furnished by the investor or by the individual partners in the business. The ability to attract the necessary capital will depend upon the inherent soundness of the proposition in each case. The Committee further point out that it would be of great assistance to manufacturers in making plans for the future, if the future policy of the Government were made known as early as possible in regard to (a) Fiscal policy, (b) rationing of raw materials, (c) the break clause in connection with the termination of munition contracts, and (d) the disposal of national factories and surplus stores. Before discussing means of providing credit facilities after the war the Committee give a short explanation of our credit system as existing before the war. In normal times the amount of

credit varies with the amount of gold, the necessity for keeping the gold standard effective acting as an automatic check upon the expansion of credit. As the balance of indebtedness of this country with foreign countries became unfavourable, and the exchanges in consequence moved against us, it became profitable to export gold to pay debts abroad. The consequent shrinkage in the amount of gold in the country, and the reduction in the Bank of England ratio of reserve to liabilities, necessitated a rise in the Bank rate, which in its turn brought about a general rise in rates of interest. This rise in interest rates had a two-fold effect. It attracted gold to this country, and induced gold, which would otherwise have been exported, to remain; secondly, it induced people to pay off loans and discouraged the raising of new ones. If the drain of gold was severe enough to make money "tight," it became difficult to renew existing loans, and this caused the sale of goods and produce upon which the loans were secured, so bringing about a fall in prices, which encouraged exports and discouraged imports, so that the situation was gradually adjusted. Further, from the point of view of purely internal trade, the fact that gold was the only legal tender was equally effective in preventing an undue expansion in credit, banks being obliged to maintain a proper relation between the extension of credit facilities and their available supply of gold. Thus the gold standard acted as a wholesome restraint upon overtrading, and often adjusted situations which, unchecked, might have developed into a severe commercial crisis. The position to-day is entirely different. As there is no free international market in gold, the operation of the foreign exchanges has

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been interrupted, while, at the same time, the internal gold circulation has been replaced by a currency-note issue. As there is no legal limit to the amount of currency notes which may be issued, there is, therefore, no automatic check upon the expansion of credit. The very large extent to which expansion has taken place is shown by the fact that whereas the total deposits at the banks of the United Kingdom, exclusive of the Bank of England, amounted at the end of 1913 to £1,070,000,000, the amount of deposits is now nearly £2,000,000,000. The enormously enhanced purchasing power thus created has, in the Committee's opinion, been one of the main factors contributing to the general rise in prices. In regard to the position after the war, the Committee express the opinion that it is essential for the reconstitution of industry and commerce to impose restrictions as soon as possible upon the creation of additional credit by the restoration of an effective gold standard. To attempt to rebuild industry by the further indiscriminate expansion of credit would endanger our position as the financial centre of the world, and would inevitably lead before long to grave disaster. The Committee, accordingly, recommend the cessation of State borrowing as early as possible, all available money being required for the financing of commerce and industry. The Committee also consider that any Government guarantee to bankers to enable them to provide by means of credits for fixed capital expenditure for the reconstitution of industry is undesirable, as being likely to occasion a further expansion of credit followed by an additional rise in prices. It is also recommended with a view to the gradual reduction of credit inflation, arising from the enormous volume of short-date Government debt, that the State should undertake funding operations at an early date for this purpose. As to banking facilities for carrying on ordinary businesses, the evidence submitted to the Committee led them to the opinion that the situation might safely be left in the hands of the banks. To enable the banks to give facilities for extended credit, it is recommended that every facility should be given by the Government to enable the banks to issue any new share capital which may be found necessary to strengthen their position.

It is thought that the rationing of available supplies of raw materials will provide a valuable guide to the banks in selecting the directions in which loans will be best secured and are most urgently required. The policy of trade organisation which is now in evidence is welcomed by the Committee as furnishing a sound basis for the granting of credit facilities to industry. They also believe that if a portion of the new issues of shares, which will be necessary for many manufacturing establishments, in the form of preference shares giving a good return in dividends, were reserved for the workpeople in these establishments, it would materially assist both financially and in other equally important directions. The Committee consider that the continuance of some measure of State control over new issues is desirable for a certain period, and that with a view to the further prevention of unsound promotions, the Companies Acts might be strengthened. The enormous potential increase in the number of small investors, as shown by the figures published by the National War Savings Committee, and the importance of the encouragement of this tendency for the rapid reconversion of trade and industry, are emphasised by the Committee, as is also the necessity for genuine saving to make good the destruction of capital during the war. In regard to State aid, while the Committee do not recommend the guaranteeing of banks by the Government or the investment of public money in loans to persons who have been unable to obtain them from other quarters, it is considered that cases of hardship may arise in connection with firms who have undertaken, under considerable pressure from the Government, the manufacture of munitions of war. To meet such cases the Committee suggest the establishment of a small Committee of Government officials and business men in leading industries to consider claims of this kind in the first instance, or to act as a Tribunal to which applicants can make appeal. The Committee are also of opinion that it would be of very great assistance to manufacturers and others, who had been prevented from forming adequate reserves by the present high rate of the Excess Profits Duty, if arrangements could be made by which a proportion of the tax should be retained for a period as a loan upon terms likely to secure early repayment.

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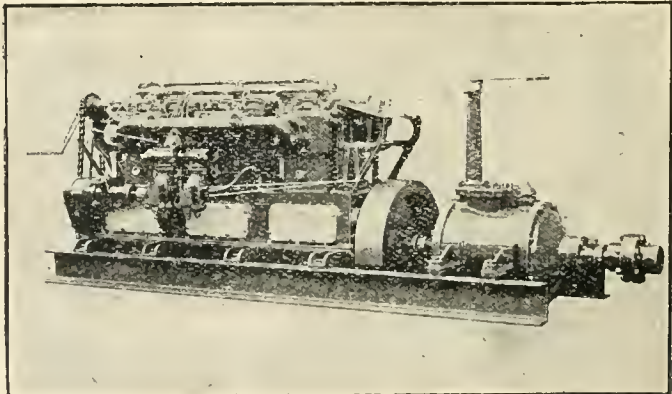
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GOLD PRODUCERS' REPLY TO INCHCAPE REPORT.

Points from Detailed Statement of London Representatives of Gold Mining Industry.

THE Gold Producers' unofficial Committee in London—consisting of Lord Harris, Sir Lionel Phillips, Sir Newton J. Moore and Messrs. Edgar Taylor, D. Malcolm and Herbert C. Blyth—issued in printed form a reply to the findings of Lord Inchcape's Committee—printed in our last issue—in the form of a letter to the Committee's constituents. We reproduce below the salient paragraphs of the latest contribution to "The Gold Problem" discussion:—

THE REAL POINT AT ISSUE.

"Lord Inchcape's Committee on Gold Production having now concluded its labours and issued its report, we deem it proper to give you an account of our stewardship and to express our regret, which we are sure you will share, that we have been unable to obtain some more satisfactory result. Assuming we are compelled to accept the Committee's conclusions, we must, nevertheless, express our regret that in publishing their report they omitted to publish our letter to them of the 16th October. . . . In the letter we deal first with our claim to consideration in respect of the increased cost of gold production and realisation during the war. In this connection our claim was entirely in our own interests, and was based on grounds of equity.

"We dealt next with the future, and here the paramount consideration was the interests of the State itself, the argument being that, if, as we believed, the maximum output of gold within the Empire was required in the national interest, it was incumbent on the Government to take steps to secure its production. The real point at issue between the gold producers and Lord Inchcape's Committee is contained in the last clause of the fifth paragraph of their conclusions—'Gold being the standard of value, no more can properly be paid for it than its value in currency.' But the question is: What is the value of our bullion in our present currency? The Committee must be well aware that there is no fixed price of gold in relation to commodities or paper, the only thing that is fixed is the quantity and fineness of gold in a certain coin, the sovereign or pound sterling, by which the value of all other commodities is measured and on which the foreign exchanges are fixed.

"The report of the Committee on 'Currency and Foreign Exchanges' in Clause 11 says: 'The greatly increased volume of bank deposits, representing a corresponding increase of purchasing power and, therefore, leading in conjunction with other causes to a great rise in prices, has brought about a corresponding demand for legal tender currency which could not have been satisfied under the stringent provisions of the Act of 1844.' That being so, we suggested that part of the profit which the Government made from the issue of notes might be allocated to relieve temporarily the precarious position of many of the mines and maintain, or possibly increase, the present output of gold. The Bank of England would still pay the same price for the gold as it does now, and we fail to see if the exchanges were against us now, under these circumstances, the foreign purchaser would get the gold at any price below its par of exchange, whether the bounty was paid or not. The gold producer would gain, temporarily no doubt, by whatever amount was allocated out of the large profit which the Government is making on the issue of this currency, and the taxpayer would lose just so much of the profit which he at present gains. The present position as regards our currency is quite unprecedented, and a proposition which under normal conditions might seem unreasonable and appear to favour a particular industry may not be so unsound as the Committee seem to think.

BANK OF ENGLAND AGREEMENT.

"During the war producers of gold have suffered special disadvantages which need hardly be repeated here, and which will continue at least until there is again a free market for gold and until freights and normal costs of production return. Upon this aspect of the subject the Committee's report is not quite correct and is eminently inconsiderate. Referring to the agreement between the producer and the Bank of England, the report says: 'We have ascertained that so far from it being the case that any pressure was exercised upon him by the Government, he accepted readily the agreement under which the Bank of England agreed to take the whole of his products.' This is literally true. But it is not by any means a complete statement of the case. Under the shipping conditions of the time, the mines, if they had desired to carry their gold elsewhere (which, of course, upon patriotic grounds alone they would not have done) would have been unable to do so. There was, therefore, no alternative but to accept and abide by the arrangement.

"Then the Committee dismisses our contention that the issue of currency notes had raised prices against us unduly as against the producers of other commodities, who were able to obtain higher prices for their products, by saying: 'But it is to be remembered that the gold producers have always had the advantage of the standard price of their product during the periods when the price of other commodities has fallen. We cannot, therefore, agree that the sense of grievance

is well founded in fact.' But this is surely evading the point. We agree with the Committee's reasons for gold having been adopted as the standard value, and we also agree that 'its value, in terms of commodities, is directly influenced by the laws of supply and demand,' but in normal times the increase or decrease in the output of gold has had its gradual effect up or down upon prices, and the gold producers have suffered or benefited accordingly. The case during the war has been entirely different. The present large issue of inconvertible legal tender paper money is in itself a direct interference with the automatic operation of the law of supply and demand as affecting gold. All that we have suggested is some action to counteract the effect of this interference.

GOLD RESERVES VERSUS PAPER.

"We are in complete accord with the Committee's view that 'we can only maintain our gold reserves in this country if the value of our exports, visible and invisible, exceed on balance the value of our imports,' and that we must depend on our capacity to render services and produce commodities wanted elsewhere at a profit. But we are convinced that the attainment of this result will not follow the policy of raising wages and issuing large quantities of inconvertible paper, which, if not checked, will not only intensify the depreciation of the currency, but will ultimately lead to complete financial collapse. This view is confirmed by the Report of the Committee on Currency and Foreign Exchanges. So much for the past. As regards the future, the Gold Production Committee expresses the belief that the British Empire will supply 'as much gold as we shall need for the purpose of strengthening our reserves,' but is of opinion that the amount of gold which could be secured by a subsidy would be of no advantage. We are not in a position to challenge the view of the Committee in that connection and their conclusion may be entirely sound. What we think they do under-rate is the extent to which the output of the British Empire is likely to fall off and the speed at which the surviving mines will become exhausted owing to the high costs of production necessitating the working only of better classes of ore. In conclusion, we may say we are by no means convinced that gold will only command, at least for some years to come, the value now being paid for it by the Bank of England in currency. Circumstances are likely to bring about considerable changes in the disposal of gold in the future."

A Government Mint.

The *Cape Argus* interviewed Capetown bankers concerning the proposal for a South African mint, as to which the Government are in communication with the Imperial authorities. The scheme, it was pointed out, would entail advantages and disadvantages. One point emphasised was that there was no profit in minting sovereigns. In fact, the minting of gold is sometimes carried out at a loss. Banking opinion was that under normal conditions no advantage would accrue from minting gold in this country. Normally, there would be a serious disadvantage in the event of the output being greater than South African requirements, when the finding of an outlet for the surplus would mean a readjustment of exchange, and the shipping of gold across the sea. The Transvaal mint, it was stated, was too small to serve the country's needs. Silver and copper, it was affirmed, could both be minted in this country at an appreciable profit. But South African silver and copper coinage would not pass as legal tender anywhere outside the Union.

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JOHANNESBURG.

MINING AND ECONOMIC QUESTIONS IN THE UNION PARLIAMENT.

Railway Programme—Unclaimed Dividends—A Diamond Diggings Bill.

REPLYING to a motion in the Senate moved by Senator Stuart, on the need for building new railways, the Minister of Railways, Mr. Burton, said that the Government had had a very liberal railway policy since Union, over 2,300 miles having been built since 1910—which was very liberal for a country like South Africa. In no country in the world were there so many railways per head of European population as South Africa. Taking the natives and coloured people into account, the Union had $14\frac{1}{2}$ miles per 10,000 inhabitants—which was considerably more than most countries. In regard to the length of railways per territory, the Union was also in a most favourable position. He could not undertake to embark on a policy of constructing railways which were to act as relief works. He pointed out that survey work and inspections had been made all the time, but the cost of railway construction at present would be almost prohibitive. Renewals, owing to the war and the exigencies of traffic, were behind, as they were in other countries. One of the reasons why Sir William Hoy was in England was to see how to obtain railway material on the most advantageous terms. The Government had no intention of postponing an active programme of railway construction until everything was quite normal, or prices were at the pre-war level, because they might have to wait for a very long time; but he must ask members to be satisfied now with the detailed surveys which had been made. To his mind, along the path of afforestation lay a better solution of the poor white problem than building new lines, because timber was a growing asset and the world's supply was not equal to the demand. He would ask the mover to withdraw the motion, which would be better for everybody concerned, as the Government could not possibly carry out the motion. After Senator Stuart had replied, the motion was withdrawn.

"FORFEITED DIVIDENDS."

Senator Munnik asked the Minister of Finance: Will the Government bring "forfeited dividends" of companies under similar regulations to those which compel surrender of unclaimed balances in banks, and shareholders' liquidation credits, and such balances generally; or is it proposed that companies are to be allowed to retain unclaimed dividends as profit, and, if so, why? The reply was as follows: If by forfeited dividends unclaimed dividends are meant, they are dealt with under the provisions of Sections 92 and 98 of the Administration of Estates Act (Act No. 24 of 1913).

DIAMOND DIGGINGS BILL.

In the House of Assembly the second reading of the Precious Stones (Alluvial) Amendment Bill was moved by Mr. F. S. Malan (Minister of Mines), who said that shortly after Union it was thought possible that a general law consolidating the diamond law of the different Provinces could be introduced, but that had been abandoned, and he considered definitely. It was then thought to deal with the alluvial diggings, leaving out the Kimberley and other mines, but that proved a course not easily to be adopted. In the meantime, however, matters had come to light in connection with the administration of the Diamond Law of the Transvaal, causing a good deal of dissatisfaction among diggers, and it was decided to bring in a short Bill to remove, as far as possible, those difficulties, and provide for a few things in existence in the Cape and not in the Transvaal. The main object of the Bill was to extend to the Transvaal the system of diggers' licences issued by the Diggers' Committees. In the Cape that had been the law for a considerable number of years. In the Transvaal, Diggers' Committees were in existence, but they had not the right to issue licences and say whether the men who applied to work claims were men of good character. The proposal was to give the Diggers' Committees the right they had in the Cape. In the Cape, if a Diggers' Committee refused to issue

a licence, the applicant could appeal to the chief of the C.I.D. in Kimberley, whose decision was final. That matter had repeatedly been before him as Minister, and the general desire had been expressed that there should be some other form of appeal. In the Bill they provided a court of appeal, consisting of the Mining Commissioner of the district, the chief of the Detective Department, and a claimholder of the district. That system would be made common to the whole of the Union. With regard to working on shares with natives, in the Cape that was not possible, but in the Transvaal the holder of a claim could go into partnership with one or two of his natives and pay by results. That led to endless abuse, and the Bill laid down that this should not be done. The main principles had been asked for by the diggers for a considerable time, and the provisions of the Bill had been carefully gone into and approved by a conference of diggers. Last year, said the Minister, the amount of money realised in consequence of the alluvial diggings was over a million pounds, so the industry was not a small one.

Champ d'Or Extension.

A trial run of the new 10-stamp battery, which has been erected on the Champ d'Or Extension property near Witpoortje, took place last week, and the machinery was found to be in perfect working order. The owners expressed themselves completely satisfied with the progress of the undertaking.

HAULING ENGINES

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- ONE SINGLE DRUM HOIST, Cylinders 17in., Stroke 50in., Drum 96in. x 6in.
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- ONE MILL ENGINE, TANGYE COMPOUND, Cortiss Valve gear and Fly Wheel, H.P. Cylinder 16in., L.P. Cylinder 28in., Approximately 250 H.P., Stroke 42in., Fly Wheel 16ft. x 2ft 3in. face, with Worthington Condensing Plant.

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- ONE LARGE GENERATOR, SIEMENS AND HALSKE, Type D.R.R., 97/30, 2,000 Volts., 165 Amps., 300 Revs. Pulley on Shaft 4ft. Sin. approx. x 3ft. 10 $\frac{1}{2}$ in. wide Exciter direct coupled on same base. Type L.A. 28/16, 110 Volts., 195 Amps., 300 Revs.
- ONE EXCITER, S.A.G.E., C. 25 Form B., 30 Kilowatts, 280 Amps., 125 Volts., 1,050 Revs. Very good and suitable as a Dynamo.

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THE JANUARY GOLD OUTPUT IN DETAIL.

Increase of £147,882—Improving Labour Position.

THE Chamber of Mines this week announced that the Transvaal gold output for January was 676,059 fine ozs., valued at £2,871,718, being an increase of 34,814 ozs., value £147,882, over the December return. The increase is mainly due to an improvement in the native labour position, the number of boys at work on the gold mines at the end of January being 160,599, as against 152,606 at the end of December, when a decrease of 7,669 native workers was reported. There are indications that the improvement is likely to continue. For the Witwatersrand and the outside districts the official gold production figures are as follows:—

WITWATERSRAND.			
	Ozs.	Value.	
January	662,205	£2,812,867	
December	630,505	2,678,217	
Increase	31,700	134,650	
OUTSIDE DISTRICTS.			
January	13,854	58,851	
December	10,740	45,619	
Increase	3,114	13,232	
GRAND TOTAL.			
January	676,059	2,871,718	
December	641,245	2,723,836	
Increase	31,814	147,882	

In the individual returns given below some substantial increases will be noticed, including the following: Randfontein Central, £32,537; Government Areas, £16,506; Modderfontein B., £14,332; New Modderfontein, £10,811; Crown Mines, £9,731; Knights Deep, £8,938; E.R.P.M., £8,632; Nourse Mines, £5,216; and Springs Mines, £5,212. The principal decreases are: Bantjes, £8,500; Durban Deep, £4,061; and Robinson Deep, £3,674.

STAMP POSITION.

In January there were 170 fewer stamps in operation than in December, the totals being 8,284 and 8,454. The figures for the Witwatersrand and the outside districts are as follows:—

	Rand.	Outside.	Total.
January	8,034	250	8,284
December	8,274	180	8,454
Increase		70	
Decrease	240		170

LABOUR FIGURES.

The native labour figures for the past three months are as follow:—

	November.	December.	January.
On gold mines	160,275	152,606	160,599
On coal mines	11,826	11,851	11,848
On diamond mines	1,016	3,180	3,539
	176,117	167,637	175,986

INDIVIDUAL RETURNS.

	Value.	Increase.	Decrease.
Aurora West	£10,985	£196	—
Bantjes Consolidated	4,409	—	£8,500
Brakpan Mines	86,241	1,189	—
City and Suburban	28,765	—	2,859
City Deep	91,415	288	—
Cons. Langlaagte	51,644	4,057	—
Cons. Main Reef	68,367	2,931	—
Crown Mines	205,110	9,731	—
Durban Roodpoort	—	—	1,024
Durban Deep	34,908	—	4,061
East Rand Proprietary	146,424	8,631	—

	Value.	Increase.	Decrease.
Ferreira Deep	62,021	4,762	—
Geduld Proprietary	63,402	931	—
Geldenhuis Deep	55,968	289	—
Ginsberg	12,790	110	—
Government Areas	188,344	16,506	—
Jupiter	27,908	—	1,053
Knight Central	27,377	22	—
Knights Deep	70,262	8,938	—
Langlaagte Estate	55,654	871	—
Luipaardsvlei	21,391	1,269	—
Meyer and Charlton	39,478	—	285
Modder B.	127,755	14,332	—
Modder Deep	88,888	4,311	—
New Goch	13,491	446	—
New Heriot	15,067	—	1,372
New Kleinfontein	57,769	200	—
New Modder	170,181	10,811	—
New Primrose	16,345	352	—
New Unified	12,293	128	—
Nourse Mines	50,098	5,246	—
Princess Estate	20,398	—	1,270
Randfontein Central	160,900	32,537	—
Robinson	45,442	1,194	—
Robinson Deep	51,075	—	3,674
Roodpoort United	23,736	1,147	—
Rose Deep	54,940	3,453	—
Simmer and Jack	49,057	—	197
Simmer Deep	48,135	—	285
Springs Mines	73,320	5,212	—
Van Ryn Estate	32,011	—	539
Van Ryn Deep	95,748	1,359	—
Village Main Reef	25,729	—	148
Village Deep	65,886	747	—
West Rand Consolidated	36,259	4,142	—
Witwatersrand	38,157	306	—
Wit. Deep	35,800	3,156	—
Wolhuter	35,792	—	1,516
Miscellaneous	15,622	11,932	—

OUTSIDE DISTRICTS.

Sub Nigel	26,149	403	—
Barrett	833	—	156
Glynn's Lydenburg	4,126	1,887	—
T.G.M.E.	14,455	9,540	—
Miscellaneous	13,288	1,558	—

GROUP PROFITS.

	November.	December.	January.
Central Mining	£210,865	£237,879	£257,634
Barnato	159,347	139,290	162,943
Gold Fields	*2,261	9,316	5,828
General Mining	17,266	20,291	23,485
Mines Selection	53,498	56,639	61,161
Union Corporation	62,232	63,419	66,396
Totals	£503,208	£526,834	£577,447

* Loss.

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THE WEEK IN THE SHAREMARKET.

A Dull Week—Firm at the Close—A Run on South-West Diamonds.

At Saturday's call the general trend of the market was downward. Geduld Props, Government Areas, all the Modder stocks, with the exception of New Modders, were marked down. Randfonteins advanced 1s., and Lace Props and Van Ryn Deeps were the turn harder. The best that can be said of the rest was that some of them were unchanged. In the course of the morning Government Areas were sold at 95s. 3d. and Springs Mines at 64s. 3d. South-West Diamonds were introduced and opened at 62s. 6d., rising to 72s. 6d. Before the call on Monday South-West Diamonds again monopolised attention. There were sales in hundreds at 77s. 6d. and in odd numbers at 80s.; 10s. was offered for a thirty days' call. The call was dull with a further drop in Government Areas and another advance in New Modders. A forced sale of a parcel of African Farms brought the price down to 14s. South-West Diamonds made 85s. at the close. The market was firm on Tuesday morning with the exception of Geduld Props. Modder East and their options made a small recovery. The other stocks in the group did nothing. After the call South-West Diamonds reached £5, receding very soon to 95s. and later to 87s. 6d., closing a 92s. 6d. The market was firm in the afternoon. At the opening on Wednesday interest was divided between the new Diamonds at 95s.—97s. 6d. and Frank Smiths, which advanced to 4s. 3d. The call was dull. Africans were again weaker and Modder East and their options lost all their recent gains. South-Westers closed at £5 7s. 6d. sales. South-Westers were again in demand on Thursday morning, and sales were booked at £5 12s. 6d. in hundreds and £5 15s. for odd lots. The call was satisfactory, the only weakness being in African Farms and Modder East. Geduld, Government Areas and City Deeps were well ahead and the remainder firm. The dealings in outside stocks during the week comprised:—Sales: Makganyene Diamonds, 37s. to 40s.; Compound Diamonds, 2s. to 2s. 5d.; Sikalavas, 5s. 6d. to 6s.; Monteleos, 19s. to 18s.; Erfbloem, 9d.; New Farms, 1s. 11d.; Henderson's Options, 1s. Buyers and sellers: Theron Diamonds, 12s. 6d., buyer; Lydenburg Lands, 2s. to 2s. 1d.; Phoenix, 11d. and 1s.

	Fri., 7th.	Sat., 8th.	Mon., 10th.	Tues., 11th.	Wed., 12th.	Thurs., 13th.
African Farms . . .	14 7	14 0	14 0	14 0	13 6*	13 9
Anglo-Amer. Corp. . .	—	—	32 6†	—	32 6†	32 6†
Apex Mines . . .	6 9	6 6*	6 6*	6 6*	—	6 6*
Bantjes Cons. . . .	2 0*	2 0*	2 0*	2 0*	2 0*	2 0*
Brakpan Mines . . .	68 0†	68 0†	62 6*	63 0*	65 9*	67 9*
Breyten Collieries . .	—	—	11 9*	—	11 9*	11 9*
Briek & Potteries . .	—	—	—	4 9*	—	—
British South Africa .	22 0†	22 0†	21 6†	—	21 0†	19 0*
Bushveld Tins . . .	0 10†	1 1†	0 8*	0 9*	0 8*	0 9*
Cassel Coals	32 6†	31 6†	30 0†	30 0†	30 0†	30 0†
Cinderella Cons. . . .	5 0†	5 0†	4 9†	3 3*	3 3*	3 0a
City and Subs. . . .	7 9*	7 6*	7 6*	7 6*	7 6*	7 6*
City Deeps	51 0*	51 0*	52 0	52 6*	51 0*	53 6*
Clydesdale Collieries .	22 6*	23 6*	23 6*	22 6*	22 6*	23 6*
Con. Investments . . .	22 6*	23 6*	—	22 6*	23 0*	22 6*
Con. Langlaagtes . . .	17 0*	—	17 0*	17 0*	17 0*	18 0
Con. Main Reefs . . .	10 6*	—	10 6*	10 9*	10 6†	10 0*
Con. Mines Selections .	25 0*	25 0*	25 0*	25 3	25 6*	25 6*
Coronation Collieries .	45 0*	—	—	—	50 0*	—
Coronation Freeholds .	—	1 3	—	1 4†	1 5†	1 5†
Crown Diamonds . . .	12 0	12 6	13 0	13 6	13 3	12 0
Daggafontein Mines . .	25 0*	25 6*	25 6†	25 3*	25 3*	25 0*
Do. Options	6 0	6 0*	5 9*	6 6	5 9*	6 7*
Durban Road. Deeps . .	—	—	—	—	7 0*	—
East Rand Centrals . .	2 3	2 3*	2 3*	2 3*	2 6	2 6
East Rand Deeps . . .	1 0	1 0	1 0*	1 0*	1 0*	1 0*
East Rand Props. . . .	6 9	6 9	6 9†	—	6 4*	—
East Rand Debs. . . .	£70*	—	£70*	—	—	£70*
Eastern Golds	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Frank Smith Dmds. . .	3 6	3 5	3 4*	3 10	4 4	4 6
Geduld Props	45 6	44 9	44 9	44 3	44 3*	45 9
Glencairns	—	—	2 0†	—	—	1 0
Glencoe Collieries . . .	6 0*	—	6 0*	6 0*	—	6 0*
Glynn's Lydenburgs . .	23 0*	23 0*	25 0*	23 0*	—	23 0*
Govt. Areas	95 3	95 3*	94 6*	94 9	94 9*	95 9
Jhb. Bd. of Executors .	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	4 6†	4 9†	4 9†	4 9†	—	—
Klerksdorp Props. . . .	3 0*	—	—	3 0*	3 0a	—
Knight Centrals	5 9	5 11	5 9	5 9*	5 10	5 10*
Lace Props	20 6*	21 6	21 9*	21 9	21 0	21 0*

	Fri., 7th.	Sat., 8th.	Mon., 10th.	Tues., 11th.	Wed., 12th.	Thurs., 13th.
Leeuwpoort Tins . . .	24 0*	23 9*	23 9*	24 0	23 6*	23 9
Lydenburg Farms . . .	8 9*	8 11	8 10*	8 10*	8 10*	8 10*
Middelvel Estates . . .	1 0*	—	1 0*	1 0*	1 0*	1 0*
Modder B's	156 3†	153 0*	153 0*	153 0*	154 0*	155 0*
Modder Deeps	145 6*	145 0*	147 0†	—	145 0*	146 3*
Modder Estates	18 4½	18 2*	18 3*	18 7½	18 4*	18 3*
Do. Options (3 yrs.) . .	4 0*	—	—	4 5	4 0*	4 0*
Do. Options (4 yrs.) . .	5 1	5 3*	5 3*	5 7*	5 3*	5 3*
Hume Pipes	28 6	23 6	28 0*	28 0*	27 6*	27 6*
Natal Navig. Colls. . .	—	21 0*	—	—	21 0*	21 0*
National Banks	295 0*	295 0*	—	297 6*	300 0†	—
New Bksburgs	1 0*	1 0*	1 0*	1 0*	1 1	1 0*
New Eland Diamonds . .	24 9	25 0†	25 0	25 6	28 0	28 0
New Era Cons	9 6*	9 6*	9 6*	9 6*	9 6*	9 6*
New Geduld Deeps . . .	5 11	5 9*	5 9*	6 0†	5 9*	5 11*
New Heriots	12 9*	12 6*	12 6*	12 6*	12 6*	12 6*
New Kleintonteins . . .	11 7½	11 0	10 9	10 9*	11 0*	11 4*
New Modders	520 0*	530 0a	530 0	525 0*	530 0*	531 3*
New Unifeds	6 0†	6 0†	—	3 6†	—	—
Nigels	4 0*	4 0*	4 0*	4 0*	4 0*	6 0†
Nourse Mines	12 6*	—	—	—	16 0†	16 0†
Premier Deferreds . . .	130 0*	—	—	—	135 0*	—
Premier Preferreds . . .	—	—	—	169 0†	152 0*	152 0*
Pretoria Cements . . .	67 0*	67 6*	67 6*	69 0†	67 6*	66 0*
Princess Estates	3 0*	3 0*	3 0*	3 3*	3 4	3 4
Rand Collieries	3 6*	3 6*	3 6*	3 6*	—	3 6*
Rand Nucleus	1 9*	1 8*	—	1 10†	—	1 9*
Rand Select. Corp. . . .	80 0*	—	83 0†	—	—	—
Randfontein Deeps . . .	4 9*	5 0*	5 3†	5 0*	5 0*	5 0*
Randfontein Estates . .	15 0*	16 0	16 0	15 9*	15 0*	—
Roberts Victors	—	—	—	—	—	50 6
Rooibergs	6 6†	6 6†	6 6†	6 6†	5 6*	5 0*
Roodepoort Unifeds . .	3 0†	2 0*	—	—	2 6*	—
Ryan Nigels	3 4*	3 6*	3 6*	3 6*	—	3 8*
Shebas	1 9†	1 3*	—	1 3*	1 9†	—
Simmer & Jacks	6 0†	—	—	—	6 0†	—
Simmer Deeps	—	2 6†	—	—	2 0†	—
S.A. Breweries	33 0*	33 0*	33 0*	32 6*	33 0*	33 6*
S.A. Lands	5 11*	5 11*	6 0*	6 1*	6 1	6 3
Springs Mines	64 6	64 0*	64 0	64 0	64 3	64 6
Sub Nigels	25 0*	25 0*	25 0*	25 0	25 0*	25 0*
Swaziland Tins	—	27 0†	—	25 0†	—	26 0†
Transvaal Lands	—	—	24 0*	—	—	24 0*
Trans. G.M. Estates . .	14 6*	14 3*	—	14 3*	14 6*	15 0
Van Ryn Deeps	67 9	68 0*	67 6*	68 0	67 9	68 0
Village Deeps	16 0*	16 0*	—	16 0*	16 0*	16 6
Western Rand Estates . .	—	—	—	2 6†	2 3†	1 6*
Witbank Collieries . . .	—	57 6*	—	—	—	—
Witwatersands	—	—	—	19 0†	—	19 0†
Wit. Deeps	10 3*	10 3*	10 6*	10 0*	11 0*	11 6*
Wit. Townships	—	27 0†	26 0†	—	27 0†	26 0†
Wolluters	—	3 6†	3 0	3 0*	3 0*	3 1*
Zaaiplaats Tins	15 5	13 6*	13 0*	12 6*	13 0	12 9*
New States	22 0*	22 0*	22 0*	22 0*	22 0*	22 0a
S. Van Ryns	12 1*	12 0*	12 0	12 0*	12 0*	12 0
S.A. Alkalis	37 6†	—	32 0*	31 6*	30 0*	31 0*
Tweefontein Colls. . . .	22 6*	22 6*	22 6*	22 6*	22 6*	22 6*
Tweefontein Pref. . . .	22 6*	22 6*	22 6*	22 6*	22 6*	22 6*
West Springs	24 0*	24 0*	23 9*	24 3*	24 9*	24 9*
West Springs Options . .	9 0*	9 6*	9 6*	9 9*	10 0*	10 0*
New Jaggers	90 0*	90 0*	90 0*	—	—	—

Union 5 per cent.: 7th, £102 15s.*; 8th, £102 15s.*; 10th, £102 17s. 6d.; 11th, £102 17s. 6d.*; 12th, £102 15s.; 13th, £102 15s.*

*Buyers. †Sellers. A Odd lots. B Ex London.

Smoother Ships for Speed.

From the considerable amount of experience that has been obtained in England on the construction of steam and motor ships with electrically welded joints there is every reason to believe that welding will become one of the standard processes in shipbuilding. By the elimination of rivets and riveting much material and a great deal of costly and tedious labour are saved. The welded ship, being lighter and having a smooth skin, can carry more cargo and make higher speed than a vessel with riveted joints. The welded joint can be made much superior to the riveted joint in compactness and strength. At present it would not be wise to have a welded vessel built by other than a firm of the highest repute, but there is no doubt that a first-class shipbuilder, using all the resources at his disposal, can turn out a welded ship which offers more advantages, structural and otherwise, than are obvious from a first consideration of the problem.

THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*—IV.

[By P. A. WAGNER, B.Sc., Ing.D.]

IRON-ORE—IRON.

As a result of conditions due to the war South Africa is at last about to enter the ranks of the world's iron producers. Two small blast furnaces are actually on the point of being blown in, and two others are expected to be in operation within the next two or three months; so that what was considered a few years ago as being without the bounds of commercial practicability will shortly be an accomplished fact. The sedimentary iron ores of the Pretoria series and Karroo system afford the bases of all four ventures. The furnaces already completed are those of the Pretoria Iron Mines, Ltd., and of the Transvaal Blast Furnace Company, Ltd. The former company propose smelting in a 50-foot furnace, with coke prepared from Dundee coal, a mixture of siliceous and "clay-band" ores from the lower portion of the Pretoria series. The siliceous ore, an arenaceous oolitic ironstone,† in which most of the iron is present as martite, assays from 40 to 54 per cent. of iron, and from 14 to 22 per cent. of silica; sulphur and phosphorus being both very low, and titanium present in traces only. The "clay-band" ore assays from 50 to 55 per cent. of iron, from 7 to 9 per cent. of silica, and from .5 to .6 per cent. of phosphorus. Both types of ore can be very cheaply mined, and are available in enormous quantity, millions of tons of the siliceous ironstone being actually in sight. Limestone from Taungs, in Bechuanaland, is to be used as flux. The furnace has a capacity of from 12 to 15 tons of pig iron per diem. The Transvaal Blast Furnace Company, who have erected a 50-foot blast furnace at Vereeniging in connection with the Union Steel Corporation, intend smelting a very pure bedded magnetite ore, found in the Transvaal coal measures on the farm De Roodepoort, No. 67, seven miles east of Ermelo. As there is very little information on record regarding the iron ores of the Transvaal coal measures, it may be noted that they occur irregularly interstratified with the almost horizontal sandstones of the Ecca series in Ermelo and Middelburg districts.‡ The beds are up to 6 feet in thickness—the average thickness being about 18 inches—and occur at varying distances above the coal seams, sometimes resting directly on them. They are in the form of attenuated lenses and consequently impersistent; the quantity of ore available—in comparison with the reserves in the Pretoria beds—being small. The ore is thinly laminated and ranges in character from soft brown limonite, through compact red hæmatite to dense, hard fine-grained magnetite, the last being a product of the metamorphism of beds of limonite and hæmatite by sheets of dolerite intrusive in the coal measures. The ore to be smelted at Vereeniging is of this type, occurring almost immediately below a sheet of dolerite. It is the purest iron-ore yet discovered in South Africa, assaying from 66 to 69 per cent. of iron and from .5 to 1.5 per cent. of silica. Sulphur and phosphorus are low, and it is quite free from titanium. The tonnage in sight, however, is not very great. A third Transvaal company, proposing to undertake the production of iron and steel, is the Locale and Industriële Maatschappij of Pretoria, who have leased a large area of the Pretoria town lands adjoining the lease of the Pretoria Iron Mines, Ltd. The other blast-furnaces referred to are in Natal, one at Wentworth, a suburb of Durban, and the other at Sweetwaters, near Maritzburg. The former is being erected by the Iron, Concrete, and Asbestos Company, of Durban, and the latter was put up many years ago by Mr. S. L. Green. A preliminary attempt, recently made, to utilise this furnace failed, but I understand that after certain alterations have been carried out a further attempt is to be made. In both instances sedimentary iron-ores from the Ecca beds of the Karroo system are to be smelted. That for the Wentworth

furnace is being quarried at Elvarston, while at Sweetwaters it is proposed to use a mixture of local ore and Ermelo magnetite. The progress of these smelting ventures, at least two of which are merely the forerunners of far more ambitious projects, will be watched with the greatest interest, as it is generally recognised that an established iron and steel industry would be of the utmost benefit to the whole of South Africa. Prospects are very hopeful, as the South African demand for iron and steel is well over 50,000 tons per annum, and is almost certain to increase.§ The dimensions to which the industry will ultimately attain depend largely upon the success of the efforts that are to be made as soon as practicable at Pretoria, to smelt the rich titaniferous magnetites of the Bushveld complex. The available reserves of these ores are practically inexhaustible—I estimate them at least at 2,000,000,000 tons—and if they could, as suggested by Stanley,¶ be smelted on a large scale in admixture with the siliceous ore of the Pretoria series—of which I estimate that there are some 1,000,000,000 tons available—using cheap non-caking Transvaal coal as fuel, South Africa should be able to export iron and steel in competition with the great iron-producing countries of the world.

IRON PYRITE

Owing to the increasing difficulty of obtaining adequate supplies of sulphur from Sicily and the United States, a considerable proportion of the sulphuric acid requirements of the large explosive companies and other industrial concerns is now manufactured from pyrite mined, or obtained as a by-product of gold mining, in the Transvaal. The available reserves of the mineral are considerable, and, as the acid can be made more cheaply from local pyrite than from imported sulphur, there is every prospect of pyrite mining becoming one of the permanent industries of the country.

KAOLIN.

Since the closing-down of the pottery at Olifantsfontein, between Germiston and Pretoria, the only use to which kaolin has been put in South Africa is the manufacture of whiting, distempers, and wall paints, "Blanco," and the like. The principal producers are the Sienna Paint Company, of Durban, who obtain their kaolin from a deposit near Padleys Station, on the Durban-Maritzburg railway.

LEAD.

Small pockets and veins of galena occur and have been worked at many localities in the dolomite of the Transvaal system in the Transvaal and on the Kaap Plateau. The mineral is also found in fissure veins in the Pretoria series and in the Waterberg sandstone formation, of which several are being exploited. At the present time the lead output of the Union is derived mainly from a vein in Waterberg sandstone, in the Blaauwberg range, in the northern part of the Zoutpansberg district of the Transvaal, and from occurrences in the dolomite. There is little prospect of any considerable increase in production. A plant for the production of white lead from cerussite has been erected at the Edendale lead mine, to the north of Hatherly.

§ Cf. Stanley, G. H.: *S.A. Journ. Industries*, December, 1917.

¶ Cf. *Journ. Chem. Met. and Min. Soc. S.A.*, November, 1909, and May, 1910.

(To be continued.)

Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

* Being Presidential Address read before the S.A. Association for the Advancement of Science.

† Cf. Wagner, P. A., and Stanley, G. H.: *S.A. Min. Journ* (1917), July 11 and 28, and August 4 and 18.

‡ Cf. Henderson, J. McC.: *Proc. Geol. Soc. S.A.* (1909), 21.

GOLD IN RELATION TO EFFORT.

Are New Standards of Value Required?—What Mr. Hennen Jennings Said in 1903.—The American Committee's Views.

IN our issue of February 1st the Special Correspondent, who wrote the exceedingly informative series of articles on the Rand's Peace problems, states that he has very little space left for any suggestion of constructive policies, but he throws out the idea that we want better and sounder standards of value. "What we want is a standard not only of gold values, but of effort value that is work value," he says, and he agitates for a world conference to deal with standards of value. Further, he suggests that the present price for gold, which is 77s. 9d. per oz. nearly, is an obsolete convention, which is not in any sort of work-a-day relation to the value standards of to-day." It is interesting to recall the opinions of by-gone days on this self-same subject, particularly in regard to the relation of gold and work standards.

Sixteen years ago, Mr. Hennen Jennings, who was at that time Chief Consulting Engineer of the Corner House, in his Presidential address read before the Institute of Mining and Metallurgy in London, read a most instructive paper on gold production, with particular reference to the great development of the South African fields. This paper was given the heading of "A Sovereign's Worth," and it contained much that is of deep interest at the present time. Mr. Jennings, in introducing his subject, remarked:—

"In my experience of gold mining, extending over twenty years, and carried on in the countries of North and South America and Africa, the difficulties of obtaining this royal metal have certainly been most indelibly impressed upon me; also its ecquettish, alluring capriciousness; but a still greater fact that has slowly dawned upon me is, that the golden stores for which man so strenuously battles are not guarded by dragon or flaming sword, but merely by an account book. In this nature's ledger an account is kept, not with the individual, but man as a whole. On one side are put the varying amounts of energy, work of hand or brain, that have been given by the different units of man; on the other side amounts of gold given out by nature. From him nature demands her full dues, even charging high interest for her services as accountant. The balance-sheets are not regularly issued, but on the whole are fairly made. What I mean is that successes in the various goldfields of the world have been balanced by the failures, and that the mining man has had to pay as much (even more) in labour for the gold he obtained as that gold could purchase in labour in other fields." I further, and perhaps rashly, indulged in metaphor as follows: "I claim that gold coins can be truly called storage cells, in to which man can pump through his dynamo (mining industry) the labour of his hands and the subtle energy of his brain, and store them for future and concentrated use under the name of latent manpower. To prevent the cells running down it is necessary to keep the gold mining dynamo running—when it stops, the value of the cells is but short-lived. Excessive running disintegrates the cells. This is only stating that when gold becomes too scarce it has but little value, and when too plentiful, none. One of the marvels of the industry is the adjustment and regulation by nature's account book of the force going into the cells. The history of gold mining for thousands of years shows that this has been so regulated at the central station that the cells have neither died out nor entirely burnt out."

"Some apprehension may be felt that this great increase in the production of gold will militate against its usefulness as a standard of value. But investigation of trade statistics and business enterprises during the period under review, as well as the great leaps shown in the output of other metals, such as steel and copper, show that the demand for gold has kept pace with the supply; and the facts that will be presented go to prove that even in the most promising goldfields of the world man must on an average fully pay for his gold."

Mr. Hennen Jennings has more latterly been chairman of the committee appointed by the Secretary of the Interior of the United States Government to study the gold situation. A summary of this Committee's report, dated October 30, 1918, will be found elsewhere in this issue. In the report of this committee we find similar thought and language to that contained in Mr. Jennings's Presidential speech in 1903. Thus on page 6 of the report we read that "the part gold has played is not apparent at first sight, but as that metal has been accepted by the workers throughout the world as a fixed and stable token of wealth, its acquirement has been an incentive to effort through all the ages in all industries and occupations. It binds together in common purpose all workers and is the most nearly universal unit of labour of which we have knowledge. Its value is not based upon

the fiat of any one Government. For the accumulated gold of the past or the prospective gold of the future, nature has and will demand an equivalent of human effort in its obtainment. Thus, a gold coin represents a storage cell of human energy, having potential value on a labour basis, and in this way has been vitally instrumental in creating confidence and unity of action among the workers of different parts of the world."

Our Special Correspondent in the issue of the *South African Mining Journal* of February 1st, asks for new standards of gold values in relation to effort. It would be interesting to have Mr. Jennings's view on our correspondent's case, that the present price for gold is an obsolete convention which is not in any sort of relation to present value standards.

TWENTY-FIVE YEARS AGO.

FROM THE *South African Mining Journal* OF FEBRUARY 17TH, 1894.

"The now famous dispute about the Langlaagte claims has been the subject of much comment in the Press and elsewhere, and there are not wanting signs of endeavour to obscure the issues and to create a feeling in favour of those who, on every possible ground affecting public interest and private right, should be made to understand that their action in attacking titles is condemned."

"We are glad to learn that Mr. William Grant, the Chamber of Mines Native Labour Commissioner, will be immediately despatched on a special mission to the Northern districts in the hope that by the exercise of his personal influence with Magato and other chiefs he may be able to bring about a marked increase in the supplies of labour, at present drawn from that quarter."

Transfer of the Salmon Block to the Consolidated Gold Fields Company has been completed.

Tenth half-yearly report of the Meyer & Charlton published; profit for the six months, £28,400.

The gold output for December, 1893, is declared at 149,814 ozs. 6 dwts.

Worcester.—"We shall await with considerable interest the results of the plant which is being erected by the Rand Central Ore Reduction Company for the treatment of this company's tailings, seeing that the process of precipitation of gold from the cyanide solution by means of electrolytic deposition on to thin sheets of lead will be tried for the first time upon a commercial as opposed to an experimental scale."

At the monthly meeting of the Witwatersrand Chamber of Mines, Mr. Lionel Philips occupied the chair, and there were also present, Messrs. Carl Hanau, Jas. Durham, T. Palmer, J. H. Leslie, T. Creewel, T. Holliday, G. Rouliot, J. Eckstein, W. St. John Carr, W. Y. Campbell, E. W. Peirsen, E. Lippert, W. Hosken, G. Sonn, R. Goldmann, H. A. Rogers, T. Mosenthal, Abe Bailey, James Hay, G. W. Jameson, F. J. Dormer, Geo. Goeh, W. T. Graham, John Tudhope, Carl Jeppe and W. H. Rogers.

Mr. Frederick H. Hatch contributes an article on the De Kaap Gold Fields.

The Share Market has remained fairly firm. East Rands advance to 14s. 6d.

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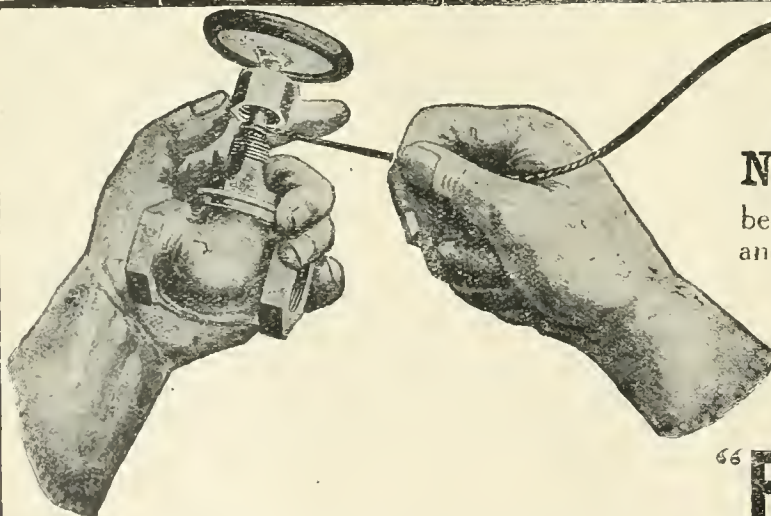
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LEAVES FROM A PROSPECTOR'S NOTE BOOK.

II.—The Summons.

To the average man—and particularly to the city or office man, provided he has a spark of romance and adventure in his cosmos—there are few lives so attractive as that of the prospector. The wide plains and the unatlassed hills, the illimitable spaces, the surfeit of God's unalloyed air, and the realisation of unfettered freedom, the drink at the river, the canopy of the tent of blue we prisoners call the sky, the buck steak cooked over the wood ashes, and the dazzling promise of untold wealth! How many a man tied to his desk has visualized this life of unrestrained splendour! "I would like to be a prospector," he says to himself as he wearily surveys the day's work done; a pile of papers and a litter of baskets. "I would like to count my labours in terms of miles that I have walked and ridges that I have climbed, not by the measure of letters answered and cheques unsigned. I would love to possess a little prospect of my own; even if it was the poorest little prospect in Christendom I would treasure it as though it were my own son!"

It is only one of the many anomalies of the strange old problem which we call life that most prospectors are just as dissatisfied with the life elysian (as it is regarded by the office man) as the office man is discontented with the four walls of *his* existence.

"It's a hard life, a damned hard life. Tons of graft and little reward. Fever and heat, penury and cold, and then if you ever do find anything it's not you that'll get the spondulix, but the big bloke from Johannesburg." That is the denunciation of his own existence which will fall from the lips of the average prospector. A certain amount of experience has taught me that it is just as natural for the prospector to grouse as it is for the soldier to grumble. Any man who has had a little experience in khaki will tell you that a soldier who doesn't grouse must be positively unhealthy. Similarly, I should give it as a well-considered opinion that a grouseless prospector must have something very seriously wrong with him.

One very common grumble of the prospector's is that the old times have passed away and that the days we live in are poor and colourless by comparison. The prospector is not, of course, by any means the only type of person who grouses and grumbles and everlastingly deplores the fact that the sunshine hours of life have passed away—oh, dear, no! Crowned heads are supposed to be everlastingly weary and even millionaires have been known to commit suicide. But the prospector must, it seems, if he be true to type, grumble and regret to a really remarkable degree.

Old William Everpoor was a very representative specimen of this brand of humanity—Everpoor, I may suggest, was not his real name, but it will suffice, and I might add that in the pre-war days he was commonly known as "Old Bill," a designation which is to-day the immortal copyright of Bainsfather and the trenches.

The first time I met Everpoor was in a bar in Hartley, Mashonaland. He was then a handsome man in the late afternoon of life. He had a bronzed face, a beard in which silver and gold seemed to battle for the mastery, and a singularly musical and attractive voice. But the tune that voice sang was a sad one. He had just returned from a long trip up to the Angwa and apparently had drawn a blank.

"Times is not what they used to be," he remarked to the bar-keeper and the world in general, including myself. "Seems to me they've put a ring fence round the world all right. A man can scarcely shoot a bit o' buck meat for himself without gettin' into trouble. An' most every prospeck from here to the Zambesi is pegged and protected by some son of sin an' backed by the Company. Used to be different in the old days. Used to be different even before the war (he was referring, of course, to the Boer War). In them times a man could shoot a duiker without havin' to go in court and perjurin' his immortal soul by swearin' that the buck tried to bite him and he shot in self-defence. In those days, too, folks warn't too particular about the minin' laws. But now—well, you can't possess a detonator without a permit, and you ain't even allowed to kill fish with dynamite. There's too many laws in the world. We're gettin' over-legislated!"

He banged the bar counter with his tremendous fist and looked challengingly around at me.

"I've a good mind to pull out altogether, Dick," he said presently, in a more gentle tone, as he addressed the barman. "Think I'll go to town (Salisbury) and get a job as a perishin' shop-walker, or somethin' like that."

He strode disconsolately out of the bar, and I did not again set eyes on old Everpoor until a few months ago when I met him on the Salisbury Railway Station. He had just come back from the Never Never Country in the far-away Achewa land, and this time his errand had not been futile. He had discovered something big, something going the usual ounce per ton over 6 feet. But it was "to H— and gone from everybody and everything. One has to get far afield to-day to get a bit away from the Law," he explained; "an' even up there the Company has got the grips on you."

He reiterated his complaint that things were not what they used to be. His face was seared with the lines of fever and the gold had gone out of his beard, leaving it all silver. His old mind had gone back to the halcyon times of yesterday. "Things were better before the war." It is worthy of remark that all events in South Africa are chronologically referable in some way or other to a war, and I asked him which epoch of slaughter he now referred to. On this occasion it was the Great War. He felt very sore about Armageddon because he had been told that he was too long in the tooth to fight. "An' I'd never last long in a Base job," he explained. And so he had buried himself in the great solitudes and just after the signing of the armistice he wandered into his old headquarters in town, at last, as he thought, a rich man. The samples and reports he brought back from the far north were certainly most promising: so good that a Salisbury mining magnate advanced him two hundred pounds on the strength of his discovery. He was no longer old Everpoor: he was fast becoming Everrich.

And therein lay his undoing. Influenza was raging in Mashonaland at the time and he proceeded to test a theory very popular with many old timers in Rhodesia. His method was to drink not wisely but too well, the thesis being, of course, that alcohol killed germs. For a while the theory seemed to be correct. But if he succeeded in frightening away the dread pneumonococci he enticed rodents. The old man grew worse and worse. He used occasionally to confide in me that it was the purple type with the long green tails which frightened him most.

One night in a fit of madness he left his room in the hotel. The barman missed his trembling hand and quivering demand for a pick-me-up the next morning. He was gone, summoned away by the call of the Ranges. Had he possessed a million he could never have refused that call. Men of his type have raised themselves on their death-beds to obey it. And so he set his face to his wild beloved North and the "prospeck" that would make him a millionaire. Yet what shall it profit a man? They found him on the Sinoia Road a week later dead. Influenza? Yes, that and drink and Anno Domini.

And so the "prospeck" of old Everpoor who was destined to become ever rich still awaits an owner up there in the brooding solitudes of the distant North. The call of the Ranges had summoned him, and he had crossed the Great Divide before he could grasp the reward for which he had toiled for half a century. It is too often the way, I hear you remark. Yes, but old Everpoor would never have been satisfied with a million or ten millions and a civilised kingdom. He had the wilds in his blood. And I feel sure that he will sleep better on the Sinoia Road than in any gaudy Mausoleum of the Mighty.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Money and Prices.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I am not a graduate of any University, neither am I a political economist or a banker. I do not, therefore, hope to throw any informative light on the extraordinarily abstruse and interesting problems concerning gold in its relation to credits, prices of commodities, industrial expansion, and labour values, which have been so ably dealt with in the columns of your paper. I am, however, a thoughtful man, and I have read not only your articles "Rand Mines and Peace Problems," but the report of the Inchape Commission, the Gold Producers' Committee, and the Vassar-Smith Commission's findings. They are each and all extraordinarily interesting, but after reading them I feel considerably bewildered and not a little anxious. I am told that the gold standard must be maintained and more gold produced. I learn that the world's gold output is declining, and that there is little prospect of the discovery of new and important gold fields. I gather, too, that in the last four years the Big Powers have issued far more paper than they can redeem in gold currency. I have tried to think these things out to their logical conclusions until my brain has got into a state of perfect chaos, and I invariably get back to the same conclusion that you are dealing in a problem of contradictions so immense and subtle that no one can define its cause and effect and solution in a sufficiently lucid manner for an ordinary man to grasp. There are one or two questions which appear to be comparatively simple, and which arise out of all this gold question, which I should like to have answered; so far, I have been wholly unable to get an intelligent reply to them. Perhaps you or your Special Correspondent can help.

Firstly, I am told that the more plentiful gold is the higher becomes the price of commodities and *vice versa*, the scarcer gold becomes the cheaper becomes the cost of living. What I want to ask is this: if gold was abolished from the world altogether would one be able to live for nothing? Is this a logical reasoning? On the face of the above postulates it seems to be. And similarly, how much additional gold would the Further East Rand have to produce before a suit of clothes, which cost six pounds in 1913 and which costs twelve pounds now, be purchasable at not less than a hundred guineas?

Secondly, admitting it is true that the big Powers can't redeem their i.o.u.s, is the world bankrupt, and do you suggest that I should turn my savings into, say, pigs or flour

and cloth? One can't eat savings, and you can't keep warm with a five-pound note wrapped around you! But with pigs and flour one can stave off starvation, and with cloth one can make raiment. Thirdly, your correspondent says that the purchasing value of a sovereign is only 12s. Therefore, ten shillings is only worth six shillings, two-and-six is only worth eighteen pence, and a tickey is therefore not worth two pence. If a tickey is not worth tuppence has a penny any value at all? Also, if a fiver is only worth three pounds, what has happened to the other two pounds?—I am, etc.,

"BEWILDERED."

[Our correspondent's questions show that if, as he says, he has read the report of the several committees on the gold question, he has not digested them. His first and second questions are answered in the report of the Vassar-Smith Committee, and the exact passages will be found printed elsewhere in this issue. His third and fourth problems are explained by the fact that a sovereign will only purchase the same amount of commodities as 12s. would have under previous conditions, as prices of commodities have risen proportionately. The decreased purchasing power of the sovereign or the fiver is due to the inflation of credit, largely by means of State paper issues combined with the scarcity and decreased production of commodities, due to the war.—Ed., S.A.M. & E.J.]

MINING MEN AND MATTERS.

Mr. J. M. Calderwood is on a visit to Natal.

* * *

With reference to the article appearing in our last issue regarding the mineral potentialities of the Congo, it is interesting to note that the gold exports of that country rose from 3 million francs in 1912 to 10 millions in 1916. Similarly, diamonds touched 375,000 francs in 1913, and in 1916 reached 1,300,000 francs.

* * *

We understand that Dr. R. A. Lehtelt, the Professor of Economics at the South African School of Mines and Technology, has in the Press an important work on the subject of Rand gold, currency and prices.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Interested."—We should advise you to leave the venture alone.

"A Newman."—In the absence of any specific agreement to the contrary, the purchaser pays the transfer fees; but the matter is always subject to arrangement between the parties. The transfer fees are $1\frac{1}{4}$ per cent. In a transaction of the magnitude you mention a lawyer had better be consulted.

"D.D."—Beyond the official statement in the daily papers we know nothing. Write to the secretary.

"Shareholder."—Your suggestion that the mine should be sold cannot be meant seriously. Besides, you do not give your name.

"J.T.W." (Standerton).—The higher costs are due to the fact that the rich patches in the mine are far apart, and much unprofitable work has to be done to get at them. Costs are, therefore, not likely to come down.

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Rhodesian Section.

DECEMBER RHODESIAN MINERAL OUTPUT IN DETAIL.

WE have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of December, 1918, with comparisons and values:—

MATABELELAND.

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
BULAWAYO DISTRICT.				
Annasona (Rhodesia, Ltd.)	3 1P	310	205.31	851
Do. (sands)	—	216	48.15	199
Antelope G.M. (Rhod.) Co.	2BM 2P 1T	3,290	619.80	2,623
Do. (sands)	—	3,026	626.76	2,637
Do. (slags)	F	—	180.99	724
Balmoral (W. Arbery)	5	475	88.97	369
Bapaune (A. W. Wilson), Nov.	(3)	90	81.79	339
Do. December	3	88	82.14	341
Bothal (W. H. Robinson), Nov.	(5)	104	21.36	88
Do. December	5	107	19.09	79
Bushtick Mines, Ltd. (clean up)	—	—	252.36	1,046
Camp (Carson Mines, Ltd.)	5 1P	533	198.80	824
Do. (sands)	—	320	46.47	193
Donavie (D. De Villiers)—	—	—	—	—
November Pannings	—	—	16.8	7
Durban (Durban Synd.)	5	300	185.26	768
Do. (sands)	—	152	24.90	103
Eagle Hawk (T. Berwitz)	5	320	111.10	461
Fred & Fred 1W (Transvaal and Rhodesian Estates)	10 2P	1,850	994.82	4,124
Do. (sands)	—	1,850	477.32	1,979
Germania (A. G. Haddingham)	2N 2P	816	431.74	1,790
Horn (Horn Reef Synd.)	5	380	151.66	629
Do. (sands)	—	260	18.83	78
Howard (Howard Syndicate)	5	736	138.54	574
Jessie (Jessie Tributors)	10 2P	950	302.42	1,254
Do. (sands)	—	614	38.49	159
Jumpers (J. P. McCay)	5	336	208.43	864
Do. (sands)	—	224	40.66	168
Lonely Reef G.M. Co.	20 3T	4,240	1,631.44	6,763
Do. (slime)	—	4,240	2,578.23	10,688
Mali (E. C. Smythe) Nov. clean up	—	—	1.42	6
Marlish (C. A. Abbot)	2	25	2.81	12
Matabele Queen's Co., Ltd.	10 2P	1,013	253.21	1,050
Do. (sands)	—	1,013	59.19	245
Moreton Pinkney (J. Robinson)	2	80	23.46	97
Napoo (H. Ashburner), Nov.	3	50	9.28	38
Near By (R. Innes)	2	4	4.07	17
New Eclipse (J. R. Stewart)	5 1T	1,250	581.02	2,408
Newtonfontein (A. H. Newton)	3	330	205.99	854
Nicholson (G. Black), Oct. clean up	—	—	20.77	86
Do. November	—	—	1.31	5
Petrel (E. Warren)	5	275	89.89	373
Red Rose (F. C. Barrett)	5	31	20.21	84
Rhodesian Queen (R. Aserman)	5	90	59.56	247
Sabi (Fletcher & Williamson)	10	600	39.52	164
Do. (sands)	—	780	135.58	562
Stock's Luck (E. W. Bosomworth)	—	—	—	—
November	5	130	49.98	207
Do. (sands)	—	650	63.64	264
Wainui (Moll & Co.), September	3	160	71.38	296
Wit Boy (Wit Boy Synd.), clean up	5	—	14.42	60
Bulawayo District Total...			11,514.22	£47,822

GWelo DISTRICT.

Babs (Beach & Baby)	H	205	93.47	387
Cactus (Renton & Gray), November	5	300	69.18	287
Do. (sands)	—	280	32.77	136
Chicago 2 (Beaton & Baldaehin)	3	180	33.39	138
Chimborazo (Wonderland Trib. Syn.)	5 1P	383	125.09	519
Do. (sands)	—	234	38.78	161
Commonage (H. W. Gray)	1T	418	40.25	167
Conqueror (Leppington & McConkey)	5	200	156.20	647
Csardas (Wolfshall Synd.)	10	600	198.99	825
Do. (sands)	—	1,350	74.92	311
Danga (Wonderland Trib. Synd.)	5 1P	89	27.10	112
Emerald (F. M. Linseott), October	(5)	450	44.74	185
Do. November	(5)	380	39.07	126
Do. December	5	300	32.71	136
Fed Up (A. Malcolm)	5	155	134.55	559
Falcon Mines, Ltd.	26N 2T	12,340	2,776.60	11,662
(Copper £11,557; Silver £508.)				

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Gaika G.M. Co., Ltd.	5 1C 1T	3,275	704.52	2,938
Do. (sands)	—	3,882	561.59	2,382
Glen Arrook (Glen Arrook Synd.)	5	150	179.34	743
Globe & Phoenix G.M. Co., Ltd.	40 12P	4,733	3,205.83	13,464
Do. not previously declared	—	—	810.48	3,404
Do. (sands)	—	3,114	228.23	959
Do. (slimes)	—	2,163	245.49	1,031
Gothic (Murray & Kennedy)	10 1P	50	45.39	188
Do. (sands)	—	330	125.60	521
Do. (slimes)	—	176	—	—
Moss (James & Worthington)	5	910	215.58	894
Nevada (F. C. Luxat)	5 1H	780	86.45	358
Do. (sands)	—	750	45.10	187
Renmore (Connemara Synd.)	20	2,867	192.62	799
Do. (sands)	—	2,867	516.31	2,140
Robin Hood (Gaika G.M. Co.)	(5 1C 1T)	78	83.81	356
Roseate (W. J. Wright)	2	30	18.26	76
Second Trial (J. Rainsford)	2	15	2.49	10
Surprise (C. Brunton) clean up	—	—	29.42	122
Tabekwe (T. Kerr), clean up	—	—	23.26	96
Do. (slimes)	F	—	4.73	19
Trixie (S. Levin), October	5 1P	657	137.61	570
Veracity (L. R. Evans)	5	530	125.33	570
Do. (sands)	—	288	30.75	127
Wanderer (Selukwe) G.M., Ltd.	4GR	9,120	952.16	3,947
Zabonkwe (Holmes and Urquhart)	5	690	—	—
Do. (sands)	—	470	131.53	545
Do. (slimes)	—	220	—	—

Gwelo District Total ... 12,619.69 £52,839

THE NATIONAL BANK OF SOUTH AFRICA, LTD.

(With which are incorporated THE BANK OF AFRICA, Ltd., Established 1879; THE NATIONAL BANK OF THE ORANGE RIVER COLONY, Ltd., Estab. 1877; and THE NATAL BANK, Ltd., Estab. 1854.)

Bankers to the Union Government in the Transvaal, the Orange Free State, and Natal, and to the Imperial Government.

Capital Subscribed and Paid up - - £2,865,000

With power to increase to - - - £4,000,000

Capital and Reserve - - - - £3,715,000

Directors:

The Hon. HUGH CRAWFORD - Chairman.
J. EMRYS EVANS, C.M.G. - Vice-Chairman.
J. ELLIS BROWN, P. DUNCAN, C.M.G., M.L.A.
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JAMES B. TAYLOR, H. O'K. WEBBER.

The Hon. Sir EDGAR H. WALTON, K.C.M.G., M.L.A.,

General Manager: E. C. REYNOLDS.

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in the principal Towns in the Union of South Africa, South West Protectorate, Rhodesia, Nyasaland, Portuguese East Africa and East Africa.

Agents in all the principal Cities of the World.

Officials of the Bank are bound to secrecy in regard to the transactions of any of its customers.

MASHONALAND.

	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
HARTLEY DISTRICT.				
Bucks (H. F. Wilson)	5	71	8.33	30
Cam and Motor G.M. Co., Ltd.— Final clean up	RP	—	230.96	1 191
Cote d'Or (Cote d'Or Syndicate) ...	3	154	238.63	929
Dalny 1W (Macdonald & Sale)— November & December (slimes)	—	1,100	124.82	517
Eiffel Blue (Willoughby's Con. Co., Ltd.)	10	1,278	490.41	2,053
Do. (sands)	—	1,180	65.43	271
Do. (slags), November	F	—	6.61	26
Enney Ext. (E. G. Goodyer), (sands)	—	—	12.65	52
Glasgow Mines, Ltd.	5	269	110.19	457
Do. (sands)	—	125	30.25	125
Golden Valley (John Mack & Co.)	10 1P	1,166	333.37	1,382
Do. (sands)	—	560	146.88	609
Do. (slimes)	—	660	—	—
Hope (Alexandra Synd. No. 2) ...	5	285	42.28	200
Do. (sands)	—	250	19.27	80
Inkerman (I. J. Minaar)	5	347	55.75	231
Do. (sands)	—	277	21.10	87
Kanyemba (Kanyemba Synd.) ...	10	420	176.87	733
Do. (sands)	—	230	40.29	167
Kelvin (Westoc Synd.)	3	200	41.72	173
Lion (J. Baker), Nov. (sands) ...	—	220	16.07	67
Do. December	2	96	18.04	75
Mali (J. Thornett)	3	392	98.32	403
Mountain Dew (A. & J. Milne) ...	10	1,150	237.09	983
Myth (H. F. Wilson)	(5)	25	4.20	16
Owl (A. Rolfe)	10	947	290.57	1,205
Do. (sands)	—	995	—	—
Do. (slimes)	—	310	92.41	383
Owl Ext. (Cribb & Seear), Nov. ...	(10)	853	129.11	535
Do. (sands)	—	865	75.34	312
Do. December	10	870	130.28	540
Do. (sands)	—	830	75.15	312
Pen (H. F. Wilson)	(5)	110	37.74	157
Pomposo (J. Knott), Nov. & Dec	2N	450	37.41	155
Do. December (sands)	—	575	38.30	365
Revie (Ambrose & Aitken)	5	746	119.00	493
Do. (sands)	—	484	28.74	119
Rouge (Dreadnought Synd.) Nov.	H	220	23.88	99
Do. (sands)	—	150	17.75	74
Do. December	H	320	33.92	141
Do. (sands)	—	290	31.79	132
Shepherds (Begbie & Jackson) ...	10 1T	660	217.80	902
Do. (sands)	—	520	—	—
Do. (slimes)	—	200	179.47	744
Step 1 (W. Miller)	2	60	30.49	126
Solpex (E. Sedgwick)	(5)	17	22.52	93
Tssessebe E. Ext. (Ulyett, Cribb and Seear)	5	873	261.74	1,085
Do. (sands)	—	794	76.49	317
Washington (I. J. Minaar)	(5)	173	27.87	116
Do. (sands)	—	138	10.55	44
What Cheer (H. Moser)	5	290	86.30	353

Hartley District Total 4,750.15 £19,716

LOMAGUNDI DISTRICT.

Anglian (Schapke and Quarrie) ...	5	244	70.61	293
Angwa (F. L. Standen)	5	657	52.35	217
Crescent (Crescent Synd.)	F	—	4.89	20
Eldorado Bkt. G.M. Co., Ltd. ...	20 2C	4,954	1,931.20	8,191
Do. (sands)	—	2,432	776.69	3,294
Gloria (H. H. Tallantire)	5	250	20.99	87
Maggiemac (J. McMardon)	5	340	99.66	413
Do. (sands)	—	360	48.82	202
Silverside (Silverside Synd.)	F	15	9.12	37

Lomagundi District Total 3,014.33 £12,754

MAZOE DISTRICT.

	No. of stamps.	Tons treated.	Yield. ozs.	Value. £
Iron 1 (J. M. Laing)	5	1,073	154.45	640
Do. (sands)	—	540	74.19	308
Jumbo (N. Irvine)	5	480	156.36	648
Do. (sands)	—	260	31.81	132
Kimberley (J. Rutter), Nov.	5	307	73.59	305
Do. Sept.-Nov. (sands)	—	600	47.83	198
Do. (T. Kerr), clean up Mill site	—	—	20.34	84
Maori Chief (D. McLean)	5	140	64.75	268
Mopani (Mopani Synd.)	2	30	11.55	48
Promoter 1 (F. C. Croxford)	C	2,003	43.56	181
Do. (sands)	—	1,327	63.57	264
Victory (G. G. N. Southey)	2	80	34.54	143

Mazoe District Total 776.54 £3,219

SALISBURY DISTRICT.

Alpes (P. Zaffere)	5	175	169.99	750
Beatrice (New Beatrice G.M. Co., Ltd. (slimes)	—	1,100	59.49	247
Cross Your Luck (W. A. Hoole)— Balance November	—	—	10.24	43
Do. November	F	—	11.84	47
Euchred (W. C. Harrison)	8	900	151.83	629
Left Bower (B. G. Byerley)	5	340	120.96	501
Minisi (Viljoen & Erasmus), Octo- ber pannings	—	—	3.67	15
Planet (Planet Mine Tribute) slimes	—	1,800	170.36	706
Shamva Mines, Ltd.	56N 10T	50,428	3,798.63	16,106
Do. (sands)	—	24,493	—	—
Do. (slimes)	—	25,162	5,126.11	21,735
Trio (Trio Syndicate)	5	210	178.45	740
Do. (sands)	—	200	27.64	115

Salisbury District Total 9,829.26 £41,589

UMTALI DISTRICT.

Gem, November	5	210	18.82	78
Do. (sands), November	—	210	94.02	389
Adjustments, April, 1917, and March, April, May, 1918 ...	—	—	—	59
Elgin (Meikle & Davis), adjust- ments May, 1918	—	—	—	18
Liverpool (R. G. Snodgrass)	5	400	53.61	222
Do. (sands)	—	200	64.48	267
Mecca (Meikle & Davis), adjust- ments, April, 1917	—	—	—	25
Rezende Mines, Ltd.	40	1,600	1,543.55	6,549
Do. (sands)	—	2,244	394.76	1,675
Do. (slimes)	—	915	390.08	1,655
Do. (concentrates)	—	83	532.29	2,259

Umtali District Total 3,091.61 £13,196

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H. ALERS HANKEY - - - Sole Agent.



MAGNOLIA ANTIFRICTION METAL

"FLOWER" BRAND.



HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making BEARINGS smooth as glass
and keeping them COOL under heaviest pressures and highest speeds.

Manufactured and Sold By—
**THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,**
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg,
Bulawayo and Salisbury.

	No. of stamps.	Tons treated.	Yield. ozs.	Value £
VICTORIA DISTRICT.				
Cambrian (J. and D. Laing)	10	500	125.93	522
Do. (sands)	—	350	36.27	150
Dakota (Dakota Syndicate)	2	120	13.26	55
Echo (A. Aronson)	5	120	29.91	124
Empress (S.A. Pros & Con. Synd.)	8	1,250	127.07	527
Do. (sands)	—	950	85.78	356
Victoria District Total			418.22	£1,734

(P) Grinding Pan, (BM) Ball Mill, (T) Tube Mill, (H) Hunting-ton Mill, (GR) Gates Rolls, (B) Ball Mill, (Pn) Pneumatic Stamp, (N) Nissen Stamp, (C) Chilian Mill, (RP) Roasting Plant, (F) Treated at Falcon Mine, (WM) Waterfall Mill, (LM) Lane Mill.

SUMMARY OF PRODUCTION, DECEMBER, 1918.

	Value.
Gold	46,014.02 ozs. £192,870
Silver	15,184.52 ozs. 2,124
Base Minerals and Precious Stones	50,848
	£245,842

GRAND TOTALS GOLD AND OTHER METALS AND MINERALS AND PRECIOUS STONES—OUTPUT TO DATE.

Gold	10,568,868 ozs. £42,728,293
Silver	2,639,845 ozs. 298,551
Base Minerals and Precious Stones	5,167,120

Grand Total value of Mineral Production to date £48,193,964

GRAND TOTALS GOLD & OTHER METALS & MINERALS AND PRECIOUS STONES, OUTPUT TO DATE.

Gold	10,568,868	Ozs.	£42,728,293
Silver	2,639,845	..	298,551
Lead	7,072.17	Tons	91,788
Copper	15,569.29	..	1,352,740
Chrome Iron	581,557.58	..	1,718,241
Tungsten Ores	179.61	..	19,526
Coal (raised)	3,900,713	.. (sales)	*1,395,847
Antimony Ore	67.72	..	1,330
Asbestos	28,198.56	..	506,650
Arsenic	189.75	..	7,836
Ironstone	27,104.42	..	3,885
Tin	3.63	..	549
Barytes	53.66	..	88
Diamonds	12,923.50	Carats	57,575
Other Precious Stones ..	72.977	..	8,065

Grand Total Value of Mineral Production to Date £48,193,964

* Includes Value of Coal used for Coke and Bricks.

NORTHERN RHODESIA

Mineral Production for December, 1918, and Total Output and Value from commencement to December 31st, 1918.

	December, 1918.			Total to Dec. 31st., 1918.		
	Ozs.	£	s. d.	Ozs.	£	s. d.
Gold	nil.	nil.		10,159.76	42,538	17 3
Silver	156.00	15	12 0	30,551.50	2,921	2 5
	Tons.			Tons.		
Lead*	nil.	nil.		16,979.84	263,081	7 1
Copper Concentrates	nil.	nil.		5,232.06	220,959	2 8
„ Finished	7.10	365	0 0	6,584.65	331,083	17 10
Bismuth	nil.	nil.		4.90	2,581	13 3
Zinc Ore	nil.	nil.		13,156.00	81,577	0 0
	£380 12 0				£947,743 0 9	

* No Lead produced during December owing to the influenza epidemic.

TO MERCHANTS AND MINE MANAGERS

MOZAMBIQUE TREACLE SUGAR, direct from the Sugar Estates. Quotations f.o.r. Lourenco Marques for immediate delivery upon application to—

RIDSDEL LATHAM & Co., LTD., 40 Commercial Exchange Buildings, Main Street, Johannesburg.

PHONE 5965.

P.O. Box 5379.

ASBESTOS—December, 1918.

	Tons.	Value.
Bulawayo District.		
Birthday A and B (Willoughby's Consolidated Co., Ltd.)	53.36	£853 15 2
Shabanie (Rhodesia and General Asbestos Corporation, Ltd.)	198.52	3,176 7 8
Sphinx (R. O. Carruthers)	15.00	382 10 0
Victoria District.		
Gath's (Rhodesia and General Asbestos Corporation, Ltd.)	170.40	2,726 8 0
King Asbestos (Rhod.), Ltd.	51.00	1,117 10 0
Do. Do.	79.00	829 10 0
Regina (S.A. Asbestos Co., Ltd.)	2.25	36 0 0
	569.53	£9,152 0 10

SUMMARY OF PRODUCTION.—DECEMBER, 1918.

	Value.
Gold	46,041.02 ozs. £192,870
Silver	15,184.52 .. 2,124
Coal (raised	39,529 tons (sales) 9,783
.. used for Coke and Bricks (estimated value) ..	4,590
Copper (Blister)	247.24 .. 12,362
Chrome Iron	2,899.12 .. 12,944
Asbestos (Fibre)	569.53 .. 9,152
Scheelite	5.81 .. 929
Iron Stone	960.00 .. 120
Arsenic	10.88 .. 761
Diamonds	60.50 cts. 307
	£245,842

STANDARD BANK

OF

SOUTH AFRICA,

LTD.

SUBSCRIBED CAPITAL

£6,194,100

PAID-UP CAPITAL

£1,548,525

RESERVE FUND

£2,000,000

ENGINEERING SECTION.

Government Control of Metals, Machinery, and Plant, etc.

The following recapitulation of the modifications in the control of materials and machinery which have been made by the Ministry of Munitions since the cessation of hostilities, is issued for the guidance of manufacturers and their agents:—

Priority.—(a) Ordinary civil orders may now be placed and executed in Class C without priority permits or certificates. No further applications need, therefore, be made to the Priority Department of the Ministry of Munitions unless it is desired for national reasons to raise the priority of an order. (b) Uncompleted contracts for the Admiralty, War Office and Ministry of Munitions, which have been placed in Classes A or B, need no longer be given the priority attaching to them under the Order of Priority of March 8th, 1917, except in cases where the contractor is notified in writing or by official notice in the Press that a particular classification is still required to be given to any particular contract. **Metals.**—(a) Modification of Control.—1. Iron, steel and non-ferrous metal may be ordered, supplied and used for Class C orders without priority classification or reference number from the Ministry of Munitions; and stocks purchased and held by Government contractors may be used for any class of work. 2. No permit is now required for the manufacture or sale of iron and steel wire or wire rope for home trade, and until further notice manufacturers of forgings, stampings and castings in iron, steel or malleable iron are at liberty to accept orders for priority below Class B. 3. The Control Order forbidding dealing in non-ferrous metals without a licence, are suspended in the case of tin, copper, brass (including swarf and scrap), cupro-nickel, scrap, spelter, lead, platinum, chrome ore and type metals. 4. All restrictions as to the sale or purchase of calcium carbide have been removed, subject to a maximum price to consumers of £40 per ton for quantities of 1 cwt. and over. (b) Export Licences.—1. Manufacturers must still continue, as hitherto, to obtain licences for export for articles made of steel and non-ferrous metals covered by the various schedules of the War Trade Department, but every effort will be made to grant these licences as freely as possible. (c) Prices.—1. The maximum prices of steel for home trade are to continue at their present level until February 1st, 1919, when the direct subsidies paid by the Government on steel will cease, and a corresponding increase in price take

place. A schedule of the prices to come into force on February 1st can be obtained on application to the Ministry of Munitions (C.I.S.P., Room 104, 8 Northumberland Avenue, London, S.W.1). The present maximum prices of pig iron are to remain unchanged until April 30th, 1919, but post-war conditions are not yet sufficiently stable to warrant a fixing of prices after that date. 2. A schedule of fixed report prices for pig iron and steel, to take effect from November 18th, 1918, has been issued, and can be obtained on application to the Ministry of Munitions, as above. The prices, which are based upon the existing home prices, plus the subsidies paid by the Government, will remain in force until further notice. Upon all exports of pig iron, unmanufactured steel and certain classes of semi-manufactured steel, a drawback will be collected by the Board of Customs and Excise, equivalent to the amount of the subsidy already paid by the Government on the articles in question. The items on which the drawback is chargeable are those whose prices are controlled and included in the schedules referred to in the preceding paragraph. Application for the schedule, showing the amount of the drawback to be collected, should be made to the Board of Customs and Excise, Lower Thames Street, London, E.C. 3. The following is a schedule of the present prices of non-ferrous metals from holdings of the Ministry:—

	Per ton, buyers.	Delivered, works.
Copper, electrolytic	£125	—
Brass ingot to Government specification	93	do.
Spelter, G.O.B.	57	do.
Refined, 99.9 per cent.	61	do.
Aluminium	200	do.
Soft pig-lead	40	ex steamer or ex store.
(The existing schedule in relation to manufacture in lead is abolished.)		
Nickel	£195	ex works or warehouse.
Antimony	55	do.

These prices are subject to usual extras for small parcels.

Plant and Machinery.—Restrictions as to dealing in, and prices of, new and second-hand machinery and treadle lathes have been withdrawn; but purchases of new machinery can only be made from firms holding trading permits from the Ministry of Munitions. Contractors in possession of plant and machinery owned by the Ministry of Munitions are at liberty to use it for civil work, provided they notify the Superintendent Engineer in their area within one week from the date on which it was first used. If the contractor does not ultimately wish to purchase the machinery, he will be required to pay a reasonable hire not to exceed the rate of 20 per cent. per annum on the cost price of the machine. The Crane Order, prohibiting the sale or supply of any cranes except under permit, and the Motor Engines and Vehicles Order prohibiting the manufacture except under permit, are revoked. Owners of steam-driven lorries and trailers are no longer required to make returns of charges of ownership.

A Floating Electric Power Station.

One of the many British "Freak" vessels produced during the war is the floating electric power station, officially known as C.D. 258. Although it is formally a ship, it was under the control of the War Office, not the Admiralty, having been secured for the service of the Directorate of Inland Waterways and Docks. Its function was to supply electric current as and where required for the miscellaneous operations of this department in connection with docks, harbours and canals used for military transport. At a distance this vessel might pass for a gunboat without guns; technically it is described as a steel barge. Amidships is a complete electric power station of 1,000 horse power designed so that practically any type of electrical installation can be fed from this source. Two oil tanks, each with a capacity of 20 tons, and an electrically driven workshop with lathe, drilling machine, and other repair plant, complete the main part of the equipment. While this "universal electric provider" is the direct outcome of war conditions, similar equipments are likely to be very useful in the construction of sea and river works. They are also worth considering for the permanent supply of electricity to riverside towns where, owing to the nature of the subsoil and other local conditions, an ordinary power station would be difficult of erection on a site convenient for water and fuel supply. In remote parts of the world a floating oil-power electric station could probably be installed and run much more cheaply than a land station.



Undeniable

Trustworthiness and Reliability are the result of Quality. Owners of KARRIER Lorries say these vehicles cannot be out-classed on Quality, that they do their work in a manner which leaves no room for adverse criticism. It's the Quality in the Lorry that ensures satisfaction.

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QUALITY FIRST & FOREMOST

British throughout. Designed & built for 3, 4 & 5 ton loads by
KARRIER WORKS, HUDDERSFIELD, ENGLAND

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Buying Just Sufficient—Decreasing Stocks—Protection of Natives—Electrical Material—Shipping and Freights—Iron and Tubing—Timber and Roofing Iron—Oils and Colours—Agricultural Implements.

ACCORDING to a commercial broker it is more difficult than ever to sell goods, as merchants are only buying just sufficient to complete orders or contracts from day to day. If the mines were purchasing their full month's requirements things would be different, but now the chief buying control has retired the various mines are purchasing moderately for the time being. The E.R.P.M. annual report states that at the end of 1918 the value of stores on hand amounted to £182,000 as compared with £64,000 at the end of December, 1914. The company has already commenced reducing these towards the position that existed prior to the war. Obviously similar plans have been adopted by all other producing companies and naturally the high-priced stores will be used up as quickly as possible, as it is an accepted fact that they will not increase in price but rather decrease with the improvement of shipping and when the industrial conditions become more normal. As a general statement, values are sagging in Johannesburg when goods have to be sold, as a bugbear exists over the quantities of material and oils coming from America, also in a measure what the speculative element holds and what is likely to come. The building strike also is beginning to tell an adverse tale, because it must be remembered that the mining material lines are interwoven with the many requirements necessary for builders. Altogether it must be recognised that the hardware and mining material merchants are passing through a very lean time, and they can only hope for the best. The timber merchants' country trade is hampered, as the sawyers are on strike, therefore all orders have to be supplied out of stock. It is true that strike affairs turn very quickly, but at the moment both sides seem adamant, and it was remarked that it might be over in three days or three months.

ELECTRICAL GOODS.

During the past week there has been no alteration in prices, although plenty of materials are coming in from England, America and Japan. Contractors are in a measure being held up by the building strike, but outside of that there is quite a lot of work in evidence. One distributing house has been doing quite a good business in C.O.D. railway orders, thus showing an improvement in country orders. The mines are also purchasing rather freely of lamps, wiring and other materials, as they are not interfered with by the strike. When the latter is fixed up, a lot of activity is anticipated in the electrical business. In the meantime stocks are accumulating, thus enabling contractors to have a better assortment of all requisites.

SHIPPING AND FREIGHTS.

A manager of a large distributing house complains that the newspapers are not exactly fair in their statements about freight reductions. What he complains about is that a bald statement is made of such and such reduction in freight without any qualification. For example, his firm has on the way ships at the highest freight, having been chartered before the armistice was signed, therefore the goods cannot be reduced at a moment's notice, which many of the customers practically demand. All these things are on account of the war conditions and must take time to readjust themselves.

IRON, STEEL AND TUBING.

There are certain sizes of tubing very much overstocked here, and that has a detrimental influence on values generally, even affecting stocks which are not too plentiful. An expert states that he has good reason to believe that we shall be getting reasonable shipments of all kinds of piping within a couple of months or so, as the manufacturers in Britain are moving in that direction. The better class valves and machinery spares are scarce, especially for the British standards. The bar iron and steel and mild steel trade has been brisk, so much so that one firm especially handling this class of business is busier than for a long while past. The orders are from all over the country, chiefly for Transvaal made iron, as far apart as the Cape to the Belgian Congo. A decent parcel of British zinc was also sent to a coast port. The price of Dunsward iron is still 40s., whereas Vereeniging mild steel has advanced 2s. 6d., making it 47s. 6d. per 100 lbs. A lot of goods such as nails, shovels, barbed and fencing wires, and steel plates at 65s. to 70s. per 100 lbs. are on the market. A quantity of cotton waste realised a penny more per lb. under the auctioneer's hammer than the wholesale price.

TIMBER, ROOFING IRON AND HARDWARE.

There is very little doing at the timber yards, and now as one day follows another the orders are less from Johannesburg, but the country trade keeps fair. However, this will soon have to be curtailed when sawing is required because the sawyers are on strike. The price of deals is 1s. 8d. to 1s. 9d.; flooring, 10d.; ceilings, 6½d. to 6¾d.; pitch and Oregon pine, 9s. to 9s. 6d. Second-hand deals, 1s. 3d. for the best and ordinary 1s. per foot. A parcel of pitch and Oregon pine was sold to a mine at 5s. 6d. per cube and more wanted. Mining pole timber is rather a drug in the market at 35s. to 40s. per ton. The mines are not using so much owing to a shortage of natives, and another thing is that the co-operative yard in its history has never been so full of timber as it is to-day. Good second-hand iron can be had from 1s. to 1s. 3d. according to gauge and length, but for the poorer kinds, a fair line is available at 9d. and even less for cattle kraals or fencing. The builders' hardware trade continues quite fair for the country districts, but not for Johannesburg and the Reef owing to the strike.

OILS, COLOURS, LINSEED OIL AND WHITE LEAD.

Business is at a standstill, partly owing to the strike and partly because of the unknown quantities coming from America. Linseed oil is 12s. I.G. from merchant to merchant and 13s. 6d. raw and 14s. 9d. boiled in the ordinary way. Turps had a drop but are now steadier at 75s. per case of 2-4's, because there does not seem to be too much in town. Petrol went up 6d. per case, but there is an idea that it will soon recede a shilling or so. Paraffin is the same price per case, viz., 23s. 6d. to 24s.; carbide, 85s. to 95s.; acetylene kumps about 11s. 6d.; cotton ropes, 4s. 6d. lb.; olive oil, 25s. to 27s. 6d. gall. List of quotations in a retail establishment: Boiled oil, 12s. 6d. per 7 lbs. and 50s. 4 imp. galls.; raw ditto, 50s. 4 imp. galls.; turps, 7s. 6d. gall., 67s. 6d. 2-4's, and 75s. 10-1's; white lead, 1s. 3d. lb. and 1s. for 112 lbs.; carbolineum, 6s. 6d.; plate glass is in good supply, but not much business through the building

strike, and the demand for making furniture mirrors has been decidedly less since the armistice. Window glass is also in good supply.

AGRICULTURAL IMPLEMENTS.

The holders of agricultural implements and the representatives of oversea firms are getting ready for the forthcoming Johannesburg agricultural show. There is not much buying at present, but what is happening is that much more renovating and repairs are taking place in our shops. This is not helpful from the sales point of view, but these may come any time, always providing that values give way even a trifle, as remember farmers are keen buyers. Again, the farmers are being affected by a lot of produce being thrown on our market from all parts of the Union and not readily absorbed here. Another reason is that the medical expenses of farmers living miles away from a doctor have been very heavy indeed during the 'flu epidemic and now they have to be met, which is another reason for the non-buying attitude.

THE PROTECTION OF NATIVES.

There are so many schemes hatched in Johannesburg and on the reef to exploit the natives that a word of warning and even advice may well be given. Naturally there is legitimate as well as not legitimate trading and exploitation. It is said that the Chinese are running lotteries and also financial companies and others are extracting funds from the natives that require the supervision of the powers that be. This note is not in any way meant to blame anyone, but rather to ask the managers and compound managers to keep a sharper lookout for the spoilers and so have more contented natives on their properties.

SECOND-HAND MINING MATERIAL.

The best machinery, particularly high pressure boilers, has quite recovered any little set-back from the armistice period. However, the poorer class of machinery is still

under a cloud of a forty per cent. drop, because of the high cost of repairs, and now there is a big sale of second-hand mining material advertised, and another in contemplation. Tram cocopans are very scarce indeed, therefore the pans are being repaired or made here. There is a big demand for tram wheels and axles and all kinds of tramway material is on the poor side, as importation is very slow because it is awkward material to carry on the urgent cargo boats. Business is exceptionally quiet, but enquiries are fair from Natal and Rhodesia and may result in orders.

Scrap Copper from the Fields of Battle.

A question which is now occupying the minds of experts is how much of the precious metal can be salvaged on the battlefields of three continents. It is asserted that something like 3,000,000 tons of copper lie on the battlefields of Belgium and France, not to mention the thousands of tons in Russia, Serbia, the Balkans, Italy, Bulgaria, Rumania, Palestine, Egypt, Mesopotamia, and other places where the dogs of war were let loose by the ex-Kaiser. It is said that of the scrap copper in France and Belgium, at least 1,000,000 tons can be recovered, or about equal to one year's output of the United States. It is now known that for five years prior to the war Germany purchased at least 200,000 tons per annum for herself and her Allies, and her purchases were so skilfully camouflaged that the destinations of the copper were seldom suspected. Germany is now practically denuded of copper, and the Peace Conference will probably see that she gets none of the battlefield scrap.

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

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Notes and News

Mr. Orr's Budget is disappointing to the gold mining industry because it holds out no prospect of an early remission of the crushing burden of taxation, direct and indirect, on the milch-cow of the country. It is even more disappointing to the diamond people, because, as they foresaw, their temporary prosperity has tempted the Minister to double the export tax on raw diamonds. Whether the result will be to give a fillip to diamond-cutting in this country remains to be seen. The diamond market, of course, is essentially a fluctuating one, and though the doubled impost may be meekly accepted in the present time of activity, it is bound to cause trouble when the inevitable setback occurs.

It is understood that the administration and technical control of the Lace Proprietary Mines, Ltd., and its subsidiaries will in future be undertaken by the Barnato Group, and that Mr. S. B. Joel will be the chairman of the various new Far East companies that are to develop the Spaarwater, Daggafontein and Vlaktefontein properties. The special meeting of the Cassel-Clydesdale combine, held this week is fully reported in this issue, and Mr. Dale Lace's speech from the chair will be found full of interest. All concerned are to be congratulated on the success that has attended their persevering efforts to secure the globular sums necessary for the development of the Far East Rand; and the whole mining community will benefit from the enterprise of Sir Abe Bailey, Mr. S. B. Joel and those associated with them.

A Syndicate, called the H.S.K. Syndicate, has been registered in Pretoria for the purpose of developing and working one of the efflorescent soda areas that was referred to in a recent issue of this journal.

The increased measure of interest that is now being taken in the Heidelberg district is evidenced in the returns of Prospecting Permits published by the Mines Department. At the end of December, 1917, the prospecting permits in issue for this district numbered 4. Six months later they had increased to 10, and at the end of last year they numbered 21. Not only in the vicinity of Heidelberg and the Sub-Nigel Mine are prospectors active, but the Wilgepoort Malan's Kraal-Rietfontein line is again engaging attention.

Mr. Bernard Oppenheimer, interviewed by the *London Star*, states that diamonds are being used industrially to a large extent. They entered substantially into the manufacture of munitions during the war, and are coming into fairly common use in industry. Among other things they are supplanting emery dust for finishing motor-car cylinders, and are becoming regular instruments in glass-cutting, wire-pulling, and a hundred other trades. Discussing the rise in prices, Mr. Oppenheimer said: "Prices are up 50 per cent. on the pre-war figures, but undoubtedly they will soar higher during the next few months." The *Financial News* says the demand for all grades of diamonds is unprecedented. A Jagersfontein shipment which the Diamond Syndicate had on hand was immediately snapped up at a higher level than had previously ruled. American buyers are still in the market and unsatisfied.

The "Home Rule" diamond rush near Taunus passed off satisfactorily last Monday, says a Vryburg correspondent, when several hundred people were present from all parts. The history of this rush is interesting, and forms an unique episode in diamond rushes in South Africa. For years past it has been known that

diamonds were to be found on this farm "Home Rule," and various plans have been suggested since the Killarney rush about six years ago to get the farm thrown open to the public, but without success. Prospecting has been going on for years, and in 1918 the owners decided to cut up a portion of the farm into acre lots. One hundred and sixty-four of these lots were sold at £100 each, title deeds and transfer being given and effected in each case. Many of the individual owners have been working their acre plots for some time, the yields in a single month being given as approximating £50,000. One stone was recently sold for £1,300, and as much as £41 has been paid per carat. The idea of selling small lots precluded outsiders from rushing any of this ground, as the owner's and discoverers' rights secured the whole acre to the owners. Many of the diggers were very annoyed at this, and it was openly stated that attempts were to be made to contest the point. A meeting of diggers was held on Monday, and a deputation appointed to interview the Mining Commissioner on the matter; and as a result of the explanations given the holdings were not interfered with. All trading rights have been reserved by the owner of "Home Rule," and big business is being done.

* * * *

The mines comprising the Barnato Group substantially increased their aggregate profit last month.

Barnato Mines. In the month of November the nine producers of this concern earned a profit of £159,347. In December this dropped to £139,290—the Randfontein Central recording a loss of £10,945. But in January the aggregate group earning was £162,943. Three-quarters of this amount was earned by the two Further East Rand ventures of the concern—Government Areas and Van Ryn Deep. The former mine earned nearly £5,000 more in January than in the preceding month, the tonnage crushed increasing from 93,000 to 106,500 tons, with working costs fractionally lower. The Van Ryn Deep company's profit was much the same in each period. Randfontein, which recorded a loss in respect of December, earned a profit of £9,123 from 143,000 tons crushed by 600 stamps in January. The mines of this group, in common with other properties along the Reef are now recovering from the effects of the influenza epidemic, and better returns are to be anticipated almost immediately. In regard to the development position of these mines, the most interesting feature is the accumulation of a colossal ore reserve in the Government G.M. Areas' property, upon which we have already commented.

* * * *

The secretary of the Oceana Development Company notifies that Dr. Hans Sauer and other gentlemen, including the representatives of large shareholders in Liverpool, have been in communication with the directors for some time with a view to obtaining representation on the Board. As these interests have now acquired approximately two-thirds of the issued capital, the directors have decided to convene a meeting for the purpose of giving an opportunity to the shareholders of electing these gentlemen on the Board, partly to fill the vacancies which will be caused by the intended resignations of Messrs. H. C. Emery and S. S. Kennedy. The names to be submitted are those of Mr. Albert Martin Oppenheimer, Dr. Hans Sauer and Mr. Robert Bleloch.

* * * *

The British South Africa Company issues an interesting statement showing the dividends declared during the year 1918 by Rhodesian mining companies. The aggregate amount was £615,640, making a total of cash dividends declared to that date of £5,902,987, without taking into account dividends declared by Rhodesian Development and miscellaneous companies in cash or scrip amounting to over £2,900,000; nor dividends paid by local Rhodesian mining companies and syndicates. During the year 1918, a total of £273,899 in dividends has been declared by Rhodesian development and miscellaneous companies.

We understand that the United Asbestos African Agency, Ltd., have been appointed the Sole Agents in South Africa for well-known Asbestos Manufacturers, Messrs. Bell's United Asbestos Co., London, as from 1st January, 1919, which information will doubtless be of interest to our readers owing to the change of representation.

* * * *

The following are details of the operations at the Zaaipplaats Tin Mine for January: Days run, 26; concentrates won, 55 long tons; estimated profit for the month, excluding Government taxes and directors' fees, £3,999 11s. 10d.; capital expenditure, £1,066 5s. 6d. From the above very satisfactory results it will be seen that slow but sure recovery is being made after the serious set-back caused by the influenza epidemic; and it is also evident that even with tin at its present low level as far as price is concerned, the Zaaipplaats Company will be able to yield satisfactory results for some time to come. Development in No. 13 continues to be most encouraging, and the steep dip of the pipe which is always a good sign is maintained. The labour position is improving; natives are coming in more freely and a considerable increase in the complement is expected this month. Work in the valley alluvial is proceeding more rapidly and sufficient progress should be made during the current month to enable the treatment of payable alluvium to be commenced in March when the output should be considerably augmented thereby. In connection with the report of the Zaaipplaats Tin Mining Co., Ltd., for last year, there are one or two points regarding the company's affairs which do not appear to have been fully appreciated locally, and which seem to call for remark. In the balance sheet as at July 31st, 1918, property stands at £75,930, buildings at £10,844, machinery, plant and equipment £61,371, reservoirs, dams and water service £4,741, and the Sterk River pumping scheme and pipe line £7,616, or a total for these items of £160,502. Supplementary to this, we find the following items appearing: Livestock and Vehicles, £671; Furniture, £300; Stores on hand, £6,622 5s. 5d.; Sundry Debtors and Payments in Advance, £9,786 18s. 2d.; Tin on hand, £21,934 6s.; Reserve Fund Investment Account: Fixed Deposit National Bank of S.A., Ltd., as per contra, £10,000; Cash at National Bank of S.A., Ltd., £19,451 1s. 5d.; a total of £68,765. This latter total of £68,765 exceeds the issued capital of the company, 255,000 Shares of 5s. each fully paid, or £63,750. That Zaaipplaats, despite its earlier vicissitudes, has been a highly profitable undertaking is proved by the fact that up to date the total amount paid to shareholders since the inception of the company has been £358,125, or 595 per cent. It may here be recalled that the Consulting Engineer, in his last annual report, stated that:

The main outstanding features which have been responsible for the very successful operations during the past year have been:—1. The Continued production of high grade ore from the No. 13 Section. Very satisfactory and extensive development of the ore body on steeply dipping fissure planes has increased the number of ore-bearing faces, by which means it is possible to augment the output. The prospects in this section are very encouraging. 2. The connecting of the deep level portion of the No. 13 Section by means of a transfer level to the No. 6 main incline. This resulted in better efficiency and lower mining costs and a considerable saving in transport and hauling charges. 3. The complete success of the smelting operations. The production of high grade metallic tin at a moderate cost, which has been sold at a considerably greater profit than you would have obtained had the concentrates been disposed of by the usual methods. The acquisition by the Company from the T.C.L. of a considerable area of ground in the Zaaipplaats Valley, which, after testing, was found to contain a large payable tonnage of tin-bearing alluvium, should, when worked, add considerably to the company's profits. The treatment of this ground is about to be started. Despite active boring and prospecting operations, no new discoveries of importance (with the exception of the "pipe" located in the connecting drive, referred to in the manager's report) were made during the year. Several promising sections are at present closed down due to shortage of native labour. The mine continues to be run on economical lines and working costs may be considered satisfactory.

TOPICS OF THE WEEK.

THE WIT. DEEP MEETING.

ALTHOUGH at the time of going to press no official intimation has been received regarding the result of the poll of Wit. Deep shareholders' proxies, it is understood that the Corner House people have been outvoted, by a small margin, in favour of the nominees of the Shareholders' Protection Committee. At the adjourned special meeting on Wednesday the latter body was strongly represented in point of number of shareholders present, but the aggregate of shares represented by the opposition exceeded by a very small amount those held by the Corner House people. Half the shareholders, it seems, did not vouchsafe to entrust their proxies to either side, and the fact throws a regrettable sidelight on the apathy of shareholders generally in Rand companies. More or less adequate reports of the long-drawn-out proceedings at Wednesday's meeting have appeared in the daily press, and we must refer interested readers to those reports. It is not for us to adjudicate upon the wisdom of the Corner House people in submitting so tamely to the handing over of the control of the Wit. Deep to those who have successfully worked up the present agitation against them. They know their business best, and, as the losers in the struggle, it seems but fair to them that we should allot more space to what amounted virtually to their defence, voiced by Sir Evelyn Wallers and Mr. Raleigh at the meeting. The main lines of the attack upon the Corner House control, viz., German connection, bad technical management in the past, and general lack of consideration for the shareholders' interests, are now familiar to our readers. By one means or another the self-constituted committee engaged in exploiting these grievances managed to secure a substantial following, and it will be interesting to see how they shoulder their new-found power and responsibility. The Corner House spokesmen certainly did not mince matters in dealing with the history of the situation that had developed from small beginnings and inchoate mutterings into the present well-stage-managed and triumphant organised opposition. At the outset Sir Evelyn Wallers announced that the Corner House had already intimated publicly that they did not intend to continue the administration of the Witwatersrand Deep, Ltd., by virtue of votes that might be cast in their favour by the Public Custodian in this country or the Public Trustee in Great Britain, nor were they prepared to be associated with Messrs. Holland, Gamble and their friends. He twitted Mr. Bleloch with admitting that were the Custodian to give his proxy in favour of the opposition it would be welcomed, and proceeded to say: "This is a further indication of the insincerity of those people who, in order to gain their ends, have charged the Central Mining Corporation with being under enemy influence or control, a charge that is entirely devoid of foundation. To my mind this attitude on the part of the people referred to is of a piece with the methods they have adopted throughout, and by which they have succeeded in persuading a considerable body of shareholders to entrust them with their votes." Sir Evelyn Wallers went on to explain that the position as far as they were concerned was as follows: "At the time Messrs. Catesby Holland and Gamble were successful in obtaining seats on the Board of the Witwatersrand Deep Company I intimated quite plainly that the methods by which they had attained their positions did not commend themselves to us, and that we were not prepared to be associated with them in the administration of the company. Our view was that shareholders should be approached by setting out all the facts to enable them to make the choice of administration they desired. We asked for a mandate on two specific points: (1) That Messrs. Holland and Gamble should, in accordance with the views just expressed, be removed from the Board, and (2) that our administration of the company should be confirmed. . . . Although we have a mandate to share the control, we have not the

mandate we asked for, nor are we prepared to share the control with people in whom we have no confidence and whose methods we strongly object to." In concluding, Sir Evelyn expressed a word of comfort and hope for the unfortunate shareholders. "With regard to the mine," he said, "the work that we have carried out underground for the last eighteen months, during which period the company has been under the control of our technical advisers, has been of a very necessary nature. We are glad for the sake of the shareholders that we were able to institute and almost to complete the work thus undertaken at great expense. It was, in our opinion, of vital importance to the possible future profit-earning capacity of the Witwatersrand Deep, and we trust that shareholders may in due time reap the benefit." With the best will in the world we cannot attempt to follow Messrs. Holland, O'Flaherty and Bleloch in their eloquent replies to the foregoing, nor is it necessary to reproduce the lengthy statement in which Mr. Raleigh, with infinite detail, disposed of the criticisms hurled at the financial and technical administration of the property. Messrs. R. Goldmann and Paul Dreyfus paid sincere and well-grounded, if belated, tributes to the excellence of the Corner House control, but all their appeals were wasted on an audience that was plainly there to register its preconceived and strongly-held convictions. Next Monday the result of the poll—already a foregone conclusion—will be publicly announced, and it remains to be seen what the new control will do, and whether the Corner House people will meekly accept this temporary and partial defeat as final. They have lost, at any rate, the first round of the contest.

The decrease in the gold output last year is apparently much greater than anticipated. The *New York Engineering and Mining Journal*, whose estimates are usually most accurate, calculates that the output is £77,600,000, compared with £87,000,000 in 1917, £96,800,000 in 1915, and £94,700,000 in 1913. The *Times* estimates that the British Empire's contribution to last year's yield was £50,700,000. The drop in the British Empire and the world's output last year, compared with the 1915 output, was 13½ and 20 per cent, respectively. The *Times* points out that the Gold Producers' Committee, when communicating with the Chancellor of the Exchequer last year, adopted the estimate in Strakosch's pamphlet of only a 14 per cent. drop in the world output last year compared with the 1915 output. This shows that they had indeed considerably under-estimated the effect of higher working costs and labour scarcity in the diminishing output, but it is interesting to note that already regarding some commodities, notably other metals, the purchasing value of gold has substantially increased—an advantage, of course, which mostly accrues to the general community.

* * * *

At the last meeting of the Chemical and Metallurgical Society, in replying to criticisms on his **The Konimeter.** previous paper on the "Kotze Konimeter," Mr. J. Imes said the results of the last nine months' experience answered some of the criticisms brought forward. No doubt, the use of the Konimeter required greater care than did the sugar-tube method. Dr. Hill, of Chicago, had invented a similar but much less efficient instrument. Mr. Harris, of the Princess Mine, had made some improvements on the original Konimeter, and carried out some useful experiments with regard to the sugar-tube method. The amount of dust per c.c. in mine air that would be dangerous is unknown, and reliable information would only be obtainable by experiments with rats combined with Konimeter samples, as suggested by Dr. Pratt Johnston. After quoting a number of figures to show the results obtained by the Konimeter and sugar-tube methods, the speaker claimed that the Konimeter, as originally designed, was quite capable of giving reliable results under most conditions that would be encountered underground at the present time.

SOUTH AFRICA AND KING COAL.—III.

Complete Lists of the Union's Coal Producers—A Hitherto Unpublished Schedule Classified According to Provinces.

In the two previous articles of this series we have directed attention to the enormous coal resources of the Union, and the possibilities of expansion of the export and by-product trades, thereby affording a solution or partial solution of the non-employment problem through the opening up of our coal areas. We also pointed to the large expansion of the Natal output and the increase in the price of the product which is largely due to the development of the export trade of that Colony.

In connection with these articles it has been pointed out to us by a gentleman who is closely associated with one of the leading coal concerns of the country that the large number of producers in the Transvaal should be taken into account inasmuch as the element of competition is more active in this country than in Natal and has a tendency to keep the price down to a lower level. At the end of 1918 the position in regard to South African collieries was that 62 concerns were producing coal. Of these 31, or exactly one-half, were located in the Transvaal, and of the remainder 25 were situated in Natal, 4 in the Orange Free State, and 2 in the Cape. Of the 31 Transvaal producers 18 were in the Middelburg area (which, of course, includes Witbank), 3 were in the Springs-Brakpan area, and the remaining 10 in other localities. These returns would seem to show that there is no great difference between the numbers of productive collieries in the Transvaal and in Natal. But it must be borne in mind that there are in the Transvaal a considerable number of concerns which are not regular and consistent producers.

TRANSSVAAL COLLIERIES.

In response to an enquiry we hereunder give a list of the coal mining concerns of the Transvaal which has been supplied by the Government Department of Mines:—

African Freehold Coal Lands, Ltd.—Middelburg.
Anglo-French (Tsvl) Navigation Coal Estates.—Middelburg.
Apex Mines.—Boksburg.
Bellevue Colliery.—Ermelo.
Breyten Collieries.—Ermelo.
Camp Colliery (Vereeniging Estates).—Heidelberg.
Carlehuw Collieries.—Ermelo.
Coronation Collieries.—Middelburg.
Douglas Colliery.—Middelburg.
East Rand Gold, Coal and Estate.—Heidelberg.
Eikeboom Coal Mines.—Middelburg.
Ermelo Town Lands Collieries.—Ermelo.
Federation Collieries.—Ermelo.
Henderson Consolidated No. 1 Area Colliery (Twefontein).—Middelburg.
Homestead Mines.—Bethal.
Kendal Colliery.—Middelburg.
Middelburg Steam Coal and Coke.—Middelburg.
Messina Development Company.—Zoutpansberg.
Northern Minerals (Transvaal), Ltd.—Zoutpansberg.
Rogerston Collieries.—Middelburg and Pretoria.
Schapenrust Colliery.—Boksburg.
South Rand Colliery.—Heidelberg.
Spitzkop Colliery.—Ermelo.
Standard Coal Mining Co.—Middelburg.
Station Colliery.—Middelburg.
Steenkopspruit Coals.—Middelburg and Bethal.
Tavistock Coal and Coke Co.—Middelburg.
Transvaal and Delagoa Bay Investment.—Middelburg.
Transvaal Exploring Land and Minerals.—Middelburg.
Twefontein Colliery and Twefontein United (Oogies).—Middelburg.
Uitkyk Collieries.—Middelburg.
Union Collieries.—Ermelo.
United Collieries.—Middelburg.

Vaalkrans Coal, Coke and Fireclay Syndicate.—Middelburg.
Welgedacht Exploration.—Boksburg.
Witbank Colliery.—Middelburg.
Zwartkoppes Coal Mine.—Lydenburg.

It will be observed that the above list contains the names of thirty-seven separate coal producing concerns which are operating in the Transvaal. Not all of these are producing at any one time, but they are all potential producers and possess more or less extensive coal seams. The list indicates the great opportunities that exist for an expansion of the Transvaal's production of coal without attacking new areas. The above schedule has been compiled in deference to the wishes of one or two subscribers of this paper who are largely interested in the coal trade. The list is not contained in the monthly returns issued by the Government Department of Mines, nor is such a schedule issued by the coal industry. It should therefore prove of considerable value to those interested in the coal trade of the country.

In order to complete the list of South African coal mining concerns we append a list of the coal mines of Natal, the Cape Colony and the Orange Free State.

CAPE PROVINCE.

Cape Province Coal Syndicate, Ltd.—Beaufort West.
Contat's Collieries.—Molteno.
Cyphergat Coal Mines.—Molteno.
Dordrecht Coal Mines.—Wodehouse.
Transkeian Collieries.—Elliot, Engcobo.

ORANGE FREE STATE.

Clydesdale (Transvaal) Collieries, Ltd.—Heilbron.
Cornelia Colliery.—Heilbron.
Kroonstad Coal Estate Co., Ltd.—Kroonstad.
Pilgrims Mining Estate and Exploration Co., Ltd. (Groenfontein Colliery).—Boshof.
Sunbeam Colliery.—Kroonstad.
Vereeniging Estates, Ltd.—Heilbron and Parys.

NATAL.

Avon Colliery.—Dundee.
Ballengeich Collieries, Ltd.—Newcastle.
Bernica Colliery, Ltd.—Vryheid.
Dewar's Anthracite Colliery Co.—Dundee.
Dundee Coal Co., Ltd. (Burnside Mines Nos. 1 and 2 and St. George's Colliery).—Dundee.
Durban Navigation Collieries, Ltd.—Dannhauser.
Elandslaagte Collieries, Ltd.—Klip River.
Enyati Colliery, Ltd.—Vryheid.
Glencoe (Natal) Collieries, Ltd.—Dundee.
Hattingspruit Collieries, Ltd.—Dundee.
Ingagane Natal Collieries, Ltd.—Newcastle.
Natal Ammonium, Ltd.—Vryheid.
Natal Cambrian Collieries, Ltd.—Klip River.
Natal Navigation Collieries and Estate Co., Ltd.—Dundee.
Natal Steam Coal Co., Ltd.—Klip River.
Newcastle Colliery Co., Ltd.—Newcastle.
Northern Natal Navigation Collieries, Ltd.—Paulpietersburg.
South African Collieries, Ltd.—Klip River.
Tendega Collieries, Ltd.—Vryheid.
Utrecht Collieries, Ltd.—Utrecht.
Veelsgeluk, Ltd.—Vryheid.
Vryheid (Natal) Railway Coal and Iron Co., Ltd. (Hlobane Colliery).—Vryheid.
Wallsend Natal Collieries, Ltd.—Dundee.

The Lonely.

The following are particulars of the output of gold, etc., for the above mine for the month of January:—Mill ran 702 hours; crushed 4,660 tons; fine gold recovered, 2,109·435 ozs., value £8,869 2s. 9d.; slimes treated, 4,660 tons; fine gold recovered, 4,205·825 ozs., value £17,684 18s. 8d.; total fine gold, 6,315·260 ozs.; total value, £26,554 1s. 5d.; profit, £15,211 10s. 9d.

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MAKGANYENE DIAMONDS.

A New Proposition With a High-Grade Product—Testing the Property—Larger Washing Plant Commencing.

DIAMOND shares have been particularly active on the local market during the past week. Favourable advices from overseas as to the outlook for diamonds have stimulated interest in diamond ventures, and this class of proposition is now engaging more interest than for some years past. Amongst the diamond concerns which are now attracting attention is the Makganyene Diamonds, Ltd. This is a company formed with a capital of £14,500 in £1 shares, with power to increase up to £100,000. Such increases from time to time have to be offered to the vendors at par. The first increase of £10,000 has been made and all the issue taken up.

The property consists of the farm Makganyene, which is held under optional contract with the right to purchase diamond rights and 500 morgen for £15,000 and 5,000 shares. If purchased before 27th April these rights may be purchased for £10,000, of which £700 already has been paid.

On the farm a mine of considerable size has been proved. The first return of diamonds during the initial prospecting period was disappointing, but a measuring up of all the yellow ground extracted from the mine shows a payable recovery in prospecting operations.

HIGH-GRADE STUFF.

These operations resulted in 157 carats being discovered and the diamonds are stated to be of the finest average quality ever produced by any mine in South Africa. They were sold at £6 per carat some time ago and are now probably worth £7 10s. to £8 per carat. It is estimated

that with proper treatment the yield should be a minimum of 4 carats per 100 loads. The diamonds are of brilliant white colour and remarkably uniform in quality. The largest diamond so far found was of 11½ carats valued at £22 per carat.

NEW PLANT ERECTED.

The farm is 140 miles west of Kimberley. About three months ago Mr. T. G. McLelland acquired a quarter interest in the property and was appointed managing director and consulting engineer, and he has just completed the erection of a small but complete washing plant with Comet crusher and rolls and two pans, one of 6 ft. and the other 8 ft. diameter. This plant will probably treat at least 100 loads per day. The mine is being developed by drives in every direction. With this plant it will be possible to get a good idea of the value of the mine. We understand that washing with the plant has now begun. Several thousand loads of clean yellow ground have been taken out and are now ready for the plant. The directors of the company are W. J. Gibson, chairman, W. E. Bleloch, T. G. McLelland, managing director, and H. Richter.

U.S. Diamond Imports: Removal of Restrictions.

A cable from Washington, dated January 4, says:—The War Trade Board announces the removal of the restrictions on the importation of polished and rough diamonds, dies, and tools, to become effective on the 1st inst.



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A YEAR OF UNION MINING TAXATION.

Details of State Share of Mining Leases and Direct Taxation.

THE report of the Commissioner for Inland Revenue for 1917-18 states that in terms of Section 101 of the Income Tax (Consolidation) Act, 1917, the Mining Taxation Act, 1910, the Mining Taxation Amendment Act, 1915, and the Special War Tax (Gold Mines) Act, 1916, were repealed with effect from 29th June, 1917. Accordingly, the profits from mining of companies whose accounting period closed on a date prior to 30th June, 1917, became assessable for tax under the provisions of the three repealed Acts referred to, and the profits from mining of companies whose accounting period closed on a date subsequent to 29th June, 1917, became assessable for tax under the provisions of the Income Tax (Consolidation) Act, 1917. The total net mining revenue derived by the State during the period under review in this report was £2,963,560, viz.: Ownership Share of Profits, £1006,031; taxation (exclusive of diamond export duty), £1,738,348; diamond export duty, £219,181; £2,963,560. The revenue received as above was derived from the respective Provinces as follows:

Province.	Gold.	Diamonds.	Base Metals.	Licences.	Total
Cape . . .	—	474,204	16,317	12,839	503,360
Transvaal .	1,653,664	443,089	68,257	233,358	2,398,368
Natal . . .	—	—	17,112	3,698	20,810
O.F.S. . .	—	29,439	171	11,412	41,022
Totals . .	1,653,664	946,732	101,857	261,307	2,963,560

GOVERNMENT OWNERSHIP SHARE OF PROFITS.

Gold Mines—Leases.—The leases granted under the provisions of the Precious and Base Metals Act, 1908, as amended by the Transvaal Mining Leases and Mineral Law Amendment Act, 1918, in operation as at 30th June, 1918, were:—

Government Gold Mining Areas (Modderfontein) Consolidated, Limited.
 Brakpan Mines, Limited.
 Springs Mines, Ltd.
 New State Areas, Limited.
 West Springs, Ltd.
 Modderfontein East, Ltd.
 Craigie Mines, Ltd.

The Government's share of profits that accrued during the period to 30th June, 1918, dealt with in this report was:

	Profit.	Government's Share.	Percentage.
	£	£	s. d.
Government Gold Mining Areas (Modderfontein) Consolidated, Ltd. (1) ..	*313,872	111,669 12	1 35.6
	+321,533	127,075 19	2 39.5
Brakpan Mines, Ltd. ...	461,324	23,066 4	0 5.0

Bewaarplaatsen.—The Bewaarplaats Money Application Act, 1917, providing for the payment to the registered owner of the land upon which bewaarplaatsen are situated of nineteen-fortieths of the money received by the Crown prior to the commencement of the Act, and of eighteen-fortieths of the moneys which may hereafter be received by the Crown, took effect from 2nd July, 1917. The moneys received prior to the commencement of the Act, and to which the provisions of Section 2 (1) have been applied, amounted to £1,074,942 19s. 4d. Of this sum £487,480 0s. 3d. was paid

out to the registered owners other than the Crown. It will be observed that the amount actually paid out does not represent nineteen-fortieths of the total. This is due to the Crown's share as registered owner in certain cases which remains in the revenue account. The moneys received during the period 2nd July, 1917, to 30th June, 1918, amounted to £174,077 1s. 1d. Of this amount £72,924 13s. 6d. was paid out to the registered owners other than the Crown. For the reason referred to in the preceding paragraph, the amount actually paid out does not represent eighteen-fortieths of the total receipts. The number of Bewaarplaatsen leases in operation as at 30th June, 1918, number twelve. *Diamond Mines.*—The revenue that accrued to the Government during the period to 30th June, 1918, from ownership share of profits was £355,275, compared with £304,424 in the preceding year. *Other Mines.*—The revenue that accrued to the Government during the period to 30th June, 1918, from ownership share of profits was £26,662, compared with £21,739 in the preceding year. *Licences and Mijpacht Dues.*—The revenue received under this head during the period under review was £261,307, compared with £239,520 in the previous year. The enactments under which these licences and dues are payable are administered by the Department of Mines and Industries, which accounts to this department for the collections.

TAXES ON MINING.

Gold Mines—Diamond Mines—Other Mines.—As already mentioned in this report, the profits, from mining are now assessable for tax under the provisions of the Income Tax (Consolidation) Act, 1917, which came into operation as from 29th June, 1917.

Export Duty on Diamonds.—Additional taxation has been imposed on the export of diamonds by the Diamond Export Duty Act, 1917, which came into operation as from 2nd July, 1917. This Act altered the basis of duty from a percentage of value based on the percentage ratio of profits to revenue to a flat rate of 5 per cent. of the value of the diamonds exported. It also transferred the incidence of the tax from the producer to the exporter. The export duty paid during the financial year 1917-18 was £219,181, compared with 172,647 in the previous year. The increase shown is not solely due to the increase in the rate of export duty, but also to the continued upward tendency of the prices of diamonds.

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* 1st January to 30th June, 1917.

+ 1st July to 31st December, 1917.

(1) This lease was originally entered into on 27th January, 1910. By resolution of Parliament the conditions of the lease were modified with effect from 1st July, 1917.

In respect of the five remaining leases, the companies had not yet reached the producing stage at 30th June, 1918, the last day of the period under review in this report.

PROGRESS IN ACCIDENT PREVENTION.*

Lessons From America—Progress in Five Years—"The Safety Habit."

THE development of the science of accident prevention in America within the last five years has been summarised in a single phrase "Nothing is so valuable economically as the man." Outlined briefly, the following have been found to be the essential features of accident-prevention work:—

(1) To ascertain the actual conditions of risk under which employees perform each task and to determine the most practicable methods of eliminating or reducing this risk. (2) The provision of proper working conditions and of efficient safeguards for dangerous machinery and appliances. (3) Careful selection, instruction and supervision of workmen, and their assignment to work for which they are best suited. (4) The promulgation and rigid enforcement of necessary rules for safeguarding. (5) The inculcation of habits of caution in the minds of all concerned. Actual conditions of risk, five years ago, were usually summarised as follows:—Industrial accidents, fatal, one every four minutes; non-fatal, one every four seconds. Only male workmen were taken into account, and no reference was made to the many women and minors engaged—probably because no statistics were available. Elimination of risk has not been achieved or even approached, but a start has been made, approximating reductions of 15 per cent. in fatal and 40 per cent. in non-fatal industrial mishaps. Members of the National Safety Council who have carefully compiled statistics covering the five-year period report even more satisfactory totals, a few declaring reductions for both fatal and non-fatal classifications of 65 to 85 per cent.

MODERN INDUSTRIAL METHODS AND STANDARDISATION OF SAFEGUARDS.

The attempted achievement of proper working conditions and the standardising of safeguards on dangerous machinery and appliances have revolutionised modern industrial methods, particularly when applied to plants engaged in "quantity production." Starting with the fundamental principle of installing only safe machinery and equipment, plant managers demand of machine builders that every guard of known merit shall be incorporated in the design of the machine. In the present-day workshop the executive strives to embody in every operation, beginning in the drafting and planning departments, provisions for safeguarding his workmen. The purchaser of a crane, for example, can now secure a completely appointed device—fully as efficient as any previous model, plus a full complement of guards. Manufacturers of woodworking devices have gone further, probably, than any other group of machinery designers, and shapers, jointers, saws and planers are usually fully protected. The same may be said, varying only in degree, for the manufacturers of lathes, cutting, stamping and boring machines commonly found in workshops of every character. In the operation of such machinery, however, plant executives, even through the most careful supervision, have not succeeded in achieving entire elimination of work accidents. In older installations the safety engineer and department foremen are relied on to design and fabricate most of the guards. Certain large industries have systematised the designing, building and installation of guarding devices by turning the work over to a special department, and men engaged in this work are not called upon to take part in production. Remarkable results have been achieved, but as yet, although records in accident prevention show reductions of 85 per cent., no safeguard, however elaborate in design and efficient in operation, is claimed to be "fool proof." Accidents still occur, though happily in decreasing number.

INITIAL TRAINING SHOULD BE IN HOME AND SCHOOL.

Careful selection, instruction and supervision of workmen and the assignment to them of work for which they are best suited may be said to start in the home rather than in the factory, workshop or mill. Education in safety

begins with the parents, continues in the schoolroom, and finally reaches the employment manager or foreman. A score of American cities have attempted civic safety work, notably Rochester, N.Y., where a campaign of education embracing every phase of home, street, public and industrial accident prevention is being carried on. Thousands of educational bulletins, changed weekly, have been printed and displayed, and the lessons have proved of intense interest. Scenes familiar to every citizen of Rochester have been utilised to drive the lesson home, and it is a safe prediction that the campaign will prove of lasting benefit. Special series of safety bulletins are available for use in public schools, and in many communities these are proving valuable aids to teachers in safeguarding pupils to and from their homes. Primary lessons in crossing streets, avoidance of traffic accidents, safety at play and in the home are taught in the lower grades, and in the advanced grades more comprehensive lessons are offered.

SCIENTIFIC COURSE FOR STUDENTS.

Carrying the idea to a logical conclusion, a national committee is now at work formulating a scientific course for students of technical schools and universities. The need for such a course is emphasised by the establishment in western Pennsylvania of a private course in safety engineering, under the auspices of a local branch of the National Safety Council, the industries being unable to secure a sufficient number of technically educated men to fill the positions awaiting such engineers. Supervision, whether in production or in accident prevention, is one of the most important of industrial problems. In safety work it has often been said that "without the whole-hearted co-operation of the foreman all efforts in accident prevention must fail." Adopting the experience of safety engineers, it has been found advisable, if not imperative, to enlist the services of the general manager not only in enforcement but in every stage of preliminary planning. This secured, the executive staff accepts as the policy of the establishment the slogan, "Stop the Accidents," or, as more popularly phrased, "Safety First." The management, the planning staff and the foremen working in unison, the employment manager is next in line for conversion to the movement. This is well emphasised by the present plan in certain large industrial plants of charting every position in the works and the acceptances by the employment managers of partly incapacitated men or women for lighter service. The plan, too, has worked well in returning injured men to work. Men incapacitated because of injury to a lower extremity are found suitable places. The promulgation and rigid enforcement of necessary rules for safeguarding have worked out in actual practice to an advanced stage of mutual co-operation. Success in drafting shop rules for accident prevention has been attained when shop safety committeemen serve on boards organised for the formulation of accident prevention standards. In fact, next to the general manager and his superintendents, the members of the shop safety committee are the most valuable safety boosters in the plant.

SAFETY RULES AUGMENTED BY BONUSES.

Safety rules are often augmented by bonuses, prizes and rewards of various kinds, and these serve to inculcate the habit of caution in the minds of all concerned. That "the best safety device known is a careful man" is an aphorism of proved merit. Discipline has its value, but watchful care must be exercised to prevent foremen from confusing discipline with peevishness or "nagging" of workmen. Proneness to follow precedent in operation, though excellent in maintaining discipline of a sort, is destructive to best results in safety work. Change of process, equipment and operation calls for complete revision of method, and gradually habits of personal caution and conscientious observance of safety standards are revising experience tables of lost-time mishaps.

* *Engineering and Mining Journal*, New York.

DR. HALDANE ON COAL DUST AND MINERS' PHTHISIS.

Dr. A. H. Watt's Views—Further Investigation Advocated.

AT Saturday night's meeting of the Chemical, Metallurgical and Mining Society, held in the School of Mines under the chairmanship of Mr. H. S. Meyer, Dr. Andrew H. Watt, of the Simmer and Jack Hospital, made the following comments on Dr. Haldane's paper—printed in this journal some months ago—dealing with the effects of dust inhalation:—I have read with great interest Dr. Haldane's paper and the discussions thereon in this country and in England. Considerable light, I think, could be thrown upon the subject by our experiences out here. Do coal miners who come to work on the Rand take longer to develop silicosis than men who have not worked in the coal mines? Figures to be comparable should be taken from the same class, *e.g.*, home-born men and colonial-born men, for it is, I think, established that the colonial-born miner is more prone to develop miners' phthisis and tuberculosis than the home-born miner. All this and similar information might be obtained from the Miners' Phthisis Bureau or Board. Experiments on animals might be carried out similar to the Simmer Deep experiments. Experiments carried out *in situ* are, I think, preferable to purely laboratory experiments. I do not think that a miner affected by silicosis, *i.e.*, fibrosis of the lungs, will benefit much by working in a coal mine. The damage, *i.e.*, the fibrosis, has already taken place, and the removal of any siliceous particles from the lungs will not make the fibrosis less. It might prevent any further absorption of silica. We would expect that, if Dr. Haldane's conclusions are correct, the amount of coal dust in a miner's lungs would prevent for a time at least the absorption of siliceous dust.

RESEARCH WORK.

On the Rand I do not consider that enough research work has been done on this most important subject. It has been left in the past to medical men and other investigators to do what they could whilst carrying on their usual occupations, which naturally absorb most of their energies. I think the Government or the industry should secure and pay skilled investigators to go into the whole subject, in the light of present-day knowledge, or the Miners' Phthisis Medical Bureau might have a department for research. The present examiners have not the time or opportunity for original work, as all their energies are devoted to the applicants for compensation and miners. Further use might be made of the mass of figures which must now be available.

Mr. A. McArthur Johnstone (chief of the Consolidated Gold Fields Laboratory) emphasised the necessity for the research work mentioned in the latter part of Dr. Watt's address. He urged that this matter should be brought before the Chamber of Mines, and said that the need for such work was well illustrated by the papers from Mr. Innes on the Kotzé Konimeter. Mr. Innes had done all that work on his own. He (the speaker) did not think it was fair that men who were engaged on other work should do research work of this nature at their own or at their company's expense, work which should be done for and the expense borne by the whole industry. He thought they should send a strong recommendation from the Society to the Chamber of Mines supporting the establishment of a research department with a special staff. The matter was left to the Council of the Society to take action.

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REPORT OF THE AMERICAN COMMITTEE ON GOLD.

Relief Measures Proposed by Gold-Mining Industry in Responses to Questionnaire.

*THE following nine items cover briefly the different measures of relief asked for by the gold-mining industry in response to the questionnaire sent out by the Committee:

1. Payment by the Government of a bonus on all the newly mined gold. This was qualified by some of the operators who asked that it apply only to primary gold mines, that is, to gold produced at mines where gold is the principal metal and not a by-product. The amount of bonus advocated ranges from \$10 to \$20 per ounce, \$10 being the amount nearly always suggested.

2. Exemption from draft of necessary employees and the placing of labour for gold mines in the deferred class.

3. The assistance of the United States Employment Service in securing and maintaining a sufficient supply of labour.

4. Furnishing of supplies to gold mines by the Government at prices more nearly in keeping with pre-war figures.

5. The abolishment of the excess-profit tax; to this some added the demand that a larger allowance for depletion for ore extracted should be permitted by Treasury officials in computing tax-charges on profits.

6. Preferred classification for railroad freight, a reduction of the advance in freight-charges for supplies to gold mines and on ore shipments.

7. In California the activities of the Debris Commission are said to cause hardships at some mines.

8. Preferred classification for electric power.

9. Allowance of free export and sale to industry of new gold.

DISCUSSION OF PROPOSED RELIEF MEASURES.

Gold miners believe that their industry is entitled to consideration of Government aid more than any other industry that may have suffered financially through conditions brought about by the war, because other industries can and do raise the prices of their goods while the purchasing power of gold is proportionately decreased. They urge that it is vital from an economic standpoint that the gold reserve be increased and the production of gold be maintained at approximately normal pre-war figures, or be stimulated beyond such amounts. If these premises be accepted, then it is necessary to find what measures can be best taken in order to accomplish these ends and to maintain as large a production of gold as is justifiable on economic grounds.

Boxes.

Payment by the Government of a bonus on all newly mined gold, in order to stimulate the production of gold, has been strongly advocated by some miners and has been approved by some bankers. The amount suggested as allowable for this purpose as agreed upon at different conferences held by the representatives of the gold-mining industry is \$10 per ounce. To what extent a bonus of \$10 per ounce would increase the production of gold is questionable, but naturally a bonus would have a stimulating effect on the industry; it would cause renewed activity at operating mines, the re-opening of a number of mines that have recently closed, and would encourage the search for new mines, unless some restrictions were put in force. By way of qualifications, it has been suggested that the bonus apply:

1. Only at those mines at which gold is the principal metal.

2. Only to mines at present operating or which were operating up to the war period and were obliged to close on account of increasing costs.

3. Only on the amount of gold produced at a mine in excess of 1917 production.

4. That the bonus apply only during the war period and cease soon after the war ends.[†]

The following also is of interest in this connection: "To stimulate the gold industry it would seem that the most practical relief to the producer would be for the Government to pay a fixed sum for every ounce of new gold sent to the Mint in addition to the price of \$20.6718, at which liquidations are now made. While I cannot speak from the viewpoint of a mining man, I have received convincing statements from reliable sources which lead me to believe that such relief during the war, and perhaps prolonged for a year or two after peace, would be the best and most effective plan for maintaining and encouraging the production of gold in this country."

It is obvious that with the restrictions mentioned the production of gold for the next two or three years would not be greatly increased over the amount produced for the year 1917. Assuming that the production of 1917 might be maintained for a few years by granting a bonus to new gold produced, a matter for consideration is to determine to what level would the production of gold fall without such a bonus. With the adjustment of economic conditions after peace is declared, and the return to industry of soldiers and labourers engaged in war-work, it is to be expected that the shortage of labour will be at least partly relieved. Wages may be expected to fall, but prices of supplies will probably continue at high level for some time, or until industry is readjusted to nearly normal conditions as compared to the pre-war period. With the return of conditions comparable to the pre-war period the gold situation would be automatically readjusted.

If scarcity of labour, high wages, and high costs of materials should continue for two years the annual production of gold in the United States may fall to \$60,000,000 or less. On the assumption that a difference of \$25,000,000 in the gold production would result from the payment of a bonus by the Government on new gold produced and that a bonus of \$10 per ounce or approximately 50% of the present value of gold would need to be paid for all gold produced in order to obtain an increased output of \$25,000,000, it is apparent that the cost of securing this \$25,000,000 would be the normal cost of \$25,000,000 plus a bonus, or approximately \$42,500,000, on the total annual production of \$85,000,000, making a total extra cost to the Government of \$67,500,000, in order to increase the gold production \$25,000,000. The suggestion that a bonus apply only to the amount of gold produced at a mine in excess of the production of that mine for 1917 would give preferential treatment to a few well-known mines, and would be of little benefit to the majority of gold mines in the United States. Sound business judgment would be against the bonus at this time.

In connection with the proposed bonus on gold it is interesting to note that the matter has had recent attention in South Africa and Australia and is now under discussion in England. The South African and Australian Governments ruled against the payment of a bonus on gold.

(To be continued.)

* Part of the "Report of the Committee appointed by the Secretary of the Interior to study the Gold Situation," October 30, 1918.

† Speech at meeting in Spokane, September 15, by George Greenwood, Old National Bank.

‡ John Clausen, Vice-President, Crocker National Bank, San Francisco.

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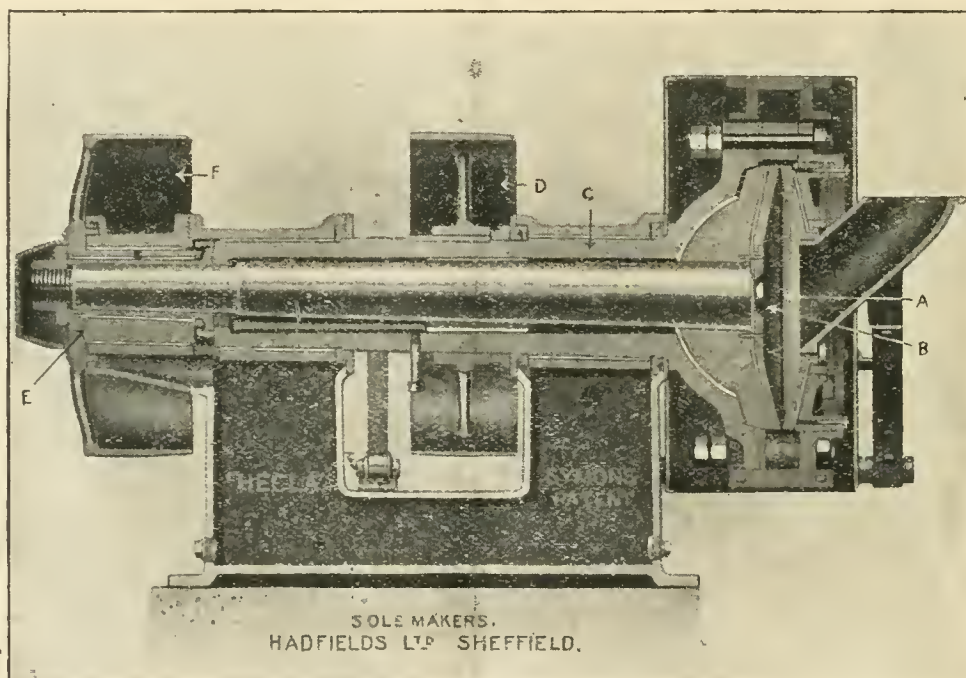
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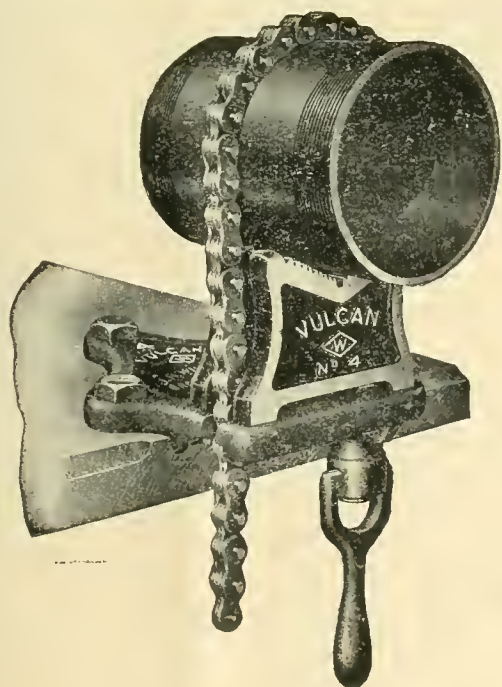
EARLY SOUTH AFRICAN TIN MINING.

BEFORE the Chemical, Metallurgical and Mining Society of South Africa last Saturday night, Mr. Max Baumann read an interesting paper on "The Ancient Tin Mines of the Transvaal," in the course of which he stated that the old workings in the Rooiberg-Leeuwpoot district were carried on by men who were probably akin to the Basutos. In 1723, Jan van der Capille, of the Dutch East India Company, at Delagoa Bay, reported that natives had been at La Goa with copper and tin for barter. Nine years later the same Capille reported that he had purchased 56 bars of tin from natives at Delagoa, which the lecturer suggested came from Rooiberg. Dr. Moffat also mentioned that in 1826 he came across a Mohurutsi copper-smith near the Molopo, who could smelt bronze and draw his own copper wire for making bracelets. Mr. Baumann quoted Theal and Hall in confirmation of his theory that these miners were of the same people as the ancient gold miners of Rhodesia, the knowledge of mining and metallurgy being handed down traditionally from father to son, mining being carried on sporadically down to recent times as borne out by the traces of recent workings. Describing the methods followed, he said that ore was broken or chipped away with hammers and gads, the latter being made of mild steel of extremely fine quality, equal to the best Swedish iron. The hammers appeared to have been made of stone or flint, without handles. When the ground was too hard for these instruments, the method of "fire-setting" was employed. Most of the ancient workings were filled in, probably for some superstitious or religious reason. The longest working was 620 feet long, 15 to 27 feet deep and 20 feet wide near the surface. Some of the workings were open to daylight, but

in others, some form of artificial light was probably employed. Transport was probably by means of baskets, grass bags or earthenware pots. Numerous traces had been discovered of smelting at Blaauwbank, including an ancient furnace bottom and an ingot of bronze. Other ingots of tin and copper, a stone ball, a hoe, human bones, teeth, tortoise-shell, chipped arrow-heads and digging stones. An ancient road running from Smelters' Kop to the Elandsberg, and wide enough to take a wheeled vehicle, was believed to be of earlier date than either Bantu or Boer. Being in an exposed position, it was probably built to ensure travellers, laden perhaps with ingots, from any sudden surprise from possible highwaymen.

Municipality's £20,000 Claim.

In an action for £20,000 damages, brought by the Kokstad Municipality against Messrs. Peters & Flamman (first defendants) and Birkett (second defendant), judgment was given on Feb. 5. Mr. Justice Buchanan said he had no hesitation in saying that the first defendants' defence—that they were prevented from carrying out the contract of supplying lights to the town by an act of State (their internment)—was a good defence. They were therefore not liable for damages. As regards the second defendant, who was appointed Controller by the Custodian of Enemy Property, he, too, was not liable, as no wilful act had been proved against him to justify the claim of damages against him. His Lordship, however, ordered the plant for lights to be forfeited to the Municipality, who had to pay the costs of the Controller; no order as to costs being made regarding the first defendants.



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THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*—V.

[By P. A. WAGNER, B.Sc., Ing.D.]

ZINC

There is no production of zinc or zinc ores in the Union at present. The only important deposits hitherto discovered are in the Malmani division of the Transvaal, near Ottoshoop, where lead and zinc ores occur partly in the form of pipes and partly in the form of disseminations in the dolomite of the Transvaal system. In 1914 a concentrating plant was erected at the Blane-Witkop Mine, and was worked for a short time, but it was found impossible to dispose of the concentrate at a remunerative price owing to the fact that, at that time, smelters in the United Kingdom and the United States, had more ore than they could deal with. About 200 tons of concentrate, averaging 50 per cent. of zinc, were produced.

ARSENIC.

Within the past six months a promising start has been made to produce white arsenic locally, this material being extensively used in the manufacture of arsenite of soda for sheep and cattle dips, insecticides, and the like. The output for the first four months of 1918, amounting to 6185 tons, valued at £619, came from the Stavoren Tin Mine, where massive arsenopyrite occurs, together with cassiterite, scheelite, copper pyrite, and other minerals. A plant for the production of white arsenic is also being erected at the Consort Mine in the Barberton district. Here arsenopyrite is associated with gold. As some £80,000 worth of arsenite of soda is annually consumed in the Union, the prospects of the industry appear very hopeful.

MAGNESITE.

The Union has considerable resources of magnesite, but owing to the low price of the mineral it is at present only being worked at Budd's Mine, near Malelane, in the Barberton district. The output of the mine amounted in 1917 to 781 short tons, valued at £2,050. The production of magnesite may be expected to increase with the expansion of the local steel industry, but there is little prospect of establishing an export trade in it.*

MANGANESE.

The manganese output, recorded in the table for 1917, came partly from a vein deposit in the Magaliesberg quartzite, near Derdepoort, and partly from an occurrence which is being exploited on the farm Daniels Rust, 12 miles north of Krugersdorp. Here the manganese occurs as nodules, up to 12 inches in diameter, composed of a mixture of pyrolusite and psilomelane. These are scattered indiscriminately through residual clay, resulting from the weathering of the dolomite of the Transvaal system. The nodules average about 47 per cent. of metallic manganese. The deposits appear to be of considerable extent, and can be cheaply worked. A somewhat similar occurrence is being opened up at Rand Gate, near Randfontein. At this locality, however, the manganese content of the nodules is lower than on Daniels Rust. Within the last week a promising deposit of this nature has also been discovered on the property of the Randfontein Central Gold Mining Company.

MICA.

The pegmatites of the so-called Mica Belt, in the Leydsdorp division of the Transvaal, yield muscovite mica of excellent quality, of which there is a small but steady

production. Efforts are being made to establish an export trade in the mineral, which is in great demand at the present time for aeroplanes and the condensers of wireless stations. Limited quantities are used in South Africa for electrical purposes, and there is a small mica factory in Johannesburg, where mica lamp-chimneys, stove-fronts, and micanite sheets are made.†

SODA.

The soda production of the Union, amounting in 1917 to 5,674.75 tons, value at £29,192 is derived from the remarkable salt-pan† on the farm Zoutpan, 25 miles north-west of Pretoria. Hitherto operations have practically been confined to thin layers of nearly pure trona, but enormous quantities of soda are also available in the mud underlying and interbedded with the trona layers. This has been proved to a depth of over 200 feet, and averages about 15 per cent. of Na_2CO_3 . A plant for the preparation of pure soda from the mud is at present being erected, and if it proves successful the future of the industry will be assured for many years to come.

TALC.

Almost the whole of the talc production of the Union comes from the Verdite Mine, near Noordkaap Station, in the Barberton district of the Transvaal, in the neighbourhood of which there are other considerable deposits. There is also a small production in the Krugersdorp district of the Transvaal, and in Zululand. The tale of the Barberton district deposits has been proved to be well adapted to the manufacture of paper and rubber. As it can be cheaply mined, and the railage to Delagoa Bay is only 3s. 6d. per ton, it is confidently anticipated that a large export trade in it will be established after the war.

TUNGSTEN.

The small output of tungsten recorded in the table of mineral production comes from the Stavoren Tin Mine, in the Olifants River tin-fields. Several tons of scheelite were also recovered in 1917 from a deposit in the neighbourhood of Leydsdorp, but this is not being worked at the present time. No workable occurrence of wolframite has been found in the Union, though the mineral occurs in association with cassiterite in certain of the mines of the Waterberg tin-fields, and in the quartz-lodes on the farm Annexe Langverwacht, near Capetown.

(To be continued.)

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* Being Presidential Address read before the S.A. Association for the Advancement of Science.

†Cf. Wagner, P. A.: S.A. Journ. Industries, March, 1918.

†Cf. Wagner, P. A.: S.A. Journ. Industries, April, 1918.

†For a description and plan of the Salt Pan see Wagner, P. A.: Proc. Geol. Soc. S.A. (1917), 30-38.

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THE WEEK IN THE SHAREMARKET.

From Firmness to Weakness—Temporary Rise of Modder East.

THE market opened on Saturday with sales of West Springs at 25s. and Makganyene Diamonds at 51s. South-Westerns were quoted at £6 5s. to £6 7s. 6d. At the call prices were inclined to be lower in the Modderfontein stocks with the exception of Modder East, which were the turn better. New Modders came sellers at £26 17s. 6d. against the previous day's buyer's bid of £26 18s. 9d. Geduld Props were quoted ex dividend. Springs came in for one of their periodical set-backs. On Monday morning South-Westerns reached £7. At the call prices were steady with advances in the Modder stocks and City Deeps. After lunch Modder East rose to 19s. 9d. with proportionate improvement in the options. South-Westerns closed at £7 2s. 6d.—£7 5s. The whole market was firm. Tuesday's opening brought a further advance of 2s. 6d. in South-Westerns. At the call Gedulds improved, Van Ryn Deep, Sub Nigels and Government Areas were about the same with rather a selling tendency at last prices; Springs came easier. Modder East were 20s. buyers, but immediately afterwards were sellers at the price. Heavy selling finally brought them back to 19s., 19s. 3d. South-Westerns finished at £7 7s. 6d.—£7 10s. Wednesday's call showed weakness in Springs and an easier tendency in Government Areas, Van Ryn Deeps and Sub Nigels, with advances in Modder B. and Geduld Props. Roberts Victor were in demand at 10s. buyers, but with no selling response. Those relics of former glory, Robinsons and Knights, were offered at 11s. and 17s. 6d. respectively. African Farms continue weak. South-Westerns finished at £8—£8 2s. 6d. Roberts Victors made 16s. 6d. at the close, presumably on the strength of the reopening of the mine. Thursday's call showed a great falling off in the volume of business and another in prices, the only important stock holding its own being Modder B. Springs had the heaviest set-back and Modder East have lost all their recent gains. The outside dealings during the week have been swamped by Makganyene Diamonds and South-Westerns, especially the latter, which from £6 5s. on Saturday were put up to £8 5s. at the time of writing. Makganyenes have ranged between 50s. and 52s. 6d. Other sales: Monteleos, 15s. to 19s. 6d., finishing at 18s.; Phoenix, 1s.; Sakalava, 6s.; Compound Diamonds, 2s.; Henderson's Options, 11d. Lydenburg Lands were quoted at 2s.—2s. 3d.

The market was again easier on Friday morning, with the exception of West Springs, notably in Springs Mines and New Modders. The following gives the alterations in prices:—Sales: Apex, 6s. 9d.; Crown Diamonds, 13s. 3d.; Brakpans, 67s., ex London; City and Suburbans, 7s. 9d.; Frank Smiths, 4s. and 3s. 11d.; East Rand Coals, 2s. 3d.; Geduld Props, 46s. 3d.; Leeuwpoots, 23s. 6d.; New Geduld Deeps, 5s. 9d.; Kleinfonteins, 12s.; Pretoria Cements, 66s. 6d.; Princess, 3s. 6d.; Rooibergs, 4s. 6d.; S.A. Lands, 6s. 1d.; Sub Nigel (10s. paid), 13s. 9d.; Springs Mines, 62s. 6d., 62s. 3d.; Modder Easts, 19s.; T.G.M. Estates, 16s.; West Springs, 25s. 9d.; Options, 10s. 9d. Buyers and sellers: Anglo-Americans, 30s., seller; New Modders, £26 10s., £26 15s.; South-West Diamonds, £8 15s., £8 17s. 6d.

	Fri., 14th.	Sat., 15th.	Mon., 17th.	Tues., 18th.	Wed., 19th.	Thurs., 20th.
African Farms . . .	13 9*	13 9*	13 9	13 6*	13 6*	13 3*
Anglo-Americans . .	—	—	—	—	—	32 0†
Apex Mines	6 9†	6 6*	6 6*	6 6	6 4*	6 6*
Bantjes	2 0*	2 0*	2 0*	2 0*	2 0*	2 0
Brakpans	67 0*	—	70 0†	70 0	69 6	68 0
Breyten Colls. . . .	11 9*	11 9*	11 9*	11 9*	11 9*	—
British South Africa	20 0*	21 0†	21 0†	19 0*	—	21 6†
Bushveld Tins . . .	0 8*	—	0 9*	0 8*	0 10*	—
Cassel Coals	30 0†	30 0†	30 0†	—	30 0†	—
Cinderellas	3 3*	3 3*	3 3*	—	3 3*	—

*Buyers. †Sellers. ‡Odd lots. †Ex London.

	Fri., 14th.	Sat., 15th.	Mon., 17th.	Tues., 18th.	Wed., 19th.	Thurs., 20th.
City & Suburbans . .	7 9*	7 9	7 6*	7 6*	7 6*	7 9*
City Deeps	54 6	—	53 9*	54 6*	54 6	—
Clydesdales	23 0*	—	25 0†	25 0†	25 0†	23 0*
Cons. Investment . .	23 0*	24 0*	24 0*	24 0*	24 0*	25 0*
Cons. Langlaagtes . .	17 0*	17 0*	17 0*	17 6*	17 6*	17 9*
Cons. Main Reefs . .	10 0*	—	10 3*	10 9	10 9*	—
Cons. Min. Selection	25 6*	—	25 6*	25 6*	25 0*	25 6*
Coronation Frees . .	1 2*	—	1 4†	—	1 4†	1 4†
Crown Diamonds . .	12 6*	12 6*	—	12 6*	12 0*	13 0
Crown Mines	—	—	42 6A	—	—	—
Daggafonteins . . .	25 0	25 6	25 3	26 0	25 6*	25 0*
Do. Options	5 6	—	6 3	5 9*	—	—
Durban Road, Deeps	7 0*	7 6*	—	—	8 3	8 0*
East Rand Coals . .	2 4*	2 3	2 3*	2 3	2 3*	2 3*
East Rand Deeps . .	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
East Rand Minings .	17 6*	18 0*	18 6†	—	—	17 6*
East Rand Props. . .	6 6	6 3	—	6 6*	6 9†	—
East Rand Debs. . .	£70*	—	£70*	£70*	£70*	£70*
Eastern Golds . . .	1 3*	1 3*	—	1 3*	1 3*	1 3
Frank Smiths	4 4	4 2	4 2	3 10	4 0	4 2
Geduld Props. . . .	47 3	46 0*	46 0	47 0A	46 9	46 6A
Glencoe Colls. . . .	6 0*	6 0*	6 0*	—	6 0*	6 0*
Glynn's Lydenburgs.	23 0*	24 6†	23 0*	24 0*	25 0	25 0†
Government Areas .	95 9*	96 0	96 0	96 0	95 9	95 3
Jhb. Brd. of Exors.	30 0*	30 0*	30 0*	30 0*	30 0*	—
Jupiters	4 3*	4 6*	4 6*	4 5*	4 6*	4 7*
Klerksdorp Props. .	1 1*	1 1*	1 1*	1 0*	1 0*	—
Knight Centrals . .	5 11	5 9	5 7*	5 9	5 8*	5 10
Lace Props.	21 6	2† 3	21 6	21 6*	21 9*	21 3*
Leeuwpoots	24 0*	24 0*	24 6	23 6*	23 9*	23 7*
Lydenburg Farms . .	8 9*	8 9*	8 9*	8 9*	9 3†	8 9
Middelville	—	1 0*	1 0*	—	1 0*	1 0*
Modder B's	155 0*	153 0*	154 0*	154 0*	155 0	155 0*
Modder Deeps	147 6	147 0*	147 6*	148 0*	148 0*	150 0†
Modder Easts	18 4*	18 9*	19 1‡	20 0	19 0*	18 9*
Do. Options (3 years)	4 1*	4 2*	4 5*	5 1	4 10	4 10†
Do. Options (4 years)	5 1*	5 6*	5 9*	6 3	5 9*	—
Hume Pipes	27 0*	26 0*	24 9	27 9*	27 9*	27 9*
Natal Navigation . .	21 0*	21 0*	—	21 0*	21 0*	21 0*
National Banks . . .	297 6*	300 0†	300 0†	300 0†	300 0†	300 0†
New Boksburgs . . .	1 1	1 0*	1 0*	1 0*	1 0*	1 0*
New Elands	29 9	29 6	30 0†	27 6*	27 6	27 0*
New Eras	9 8*	9 8*	9 9	9 9*	9 6*	9 6*
New Geduld Deeps .	5 10*	5 10*	5 10*	6 0†	5 9*	6 0†
New Heriots	12 6*	—	13 0*	—	12 6*	15 0†
New Kleinfonteins .	12 0*	12 0	11 6*	11 6	11 6*	11 7
New Modders	538 9†	540 0	537 6	450 9A	540 0†	—
New Unifeds	—	—	—	—	3 6*	3 6*
Nigels	4 0*	4 0*	4 0*	—	4 0*	4 0*
Nourse Mines	16 0†	16 0†	—	12 6*	—	—
Premier Pref.	152 6*	—	—	152 6*	—	152 6*
Pretoria Cements . .	66 6*	65 3*	66 0*	68 0†	66 0*	66 0*
Princess Estates . .	3 4*	3 4*	3 6	3 6	3 3*	3 4*
Rand Collieries . . .	3 6*	3 6*	—	—	3 9†	—
Rand Nucleus	1 10*	1 10*	—	1 11*	1 11*	1 11*
Rand Selections . . .	80 0*	—	—	—	—	—
Randfontein Deeps .	5 0*	5 0*	5 3†	—	5 0*	5 0
Randfontein Est. . .	—	15 6	15 3*	15 3*	15 0	14 9*
Roberts Victors . . .	7 6*	6 0*	—	7 0*	9 0A	—
Rooibergs	5 0	5 0	4 9	4 0*	4 0*	4 4
Rood. Uniteds	—	—	—	2 6*	2 6*	—
Robinsons	15 0†	15 0†	11 0†	11 0†	11 0†	—
Ryan Nigels	—	3 6*	3 6*	3 6*	—	3 6*
Shebas	1 3*	1 3*	1 6*	1 6*	1 6*	—
Simmer Deeps	1 6*	2 0†	1 6*	—	1 6*	—
S.A. Breweries	33 0*	—	—	—	—	—
S.A. Lands	6 1*	6 1	6 0*	6 0*	6 0*	6 0*
Springs Mines	66 0*	64 9	65 0	64 3	63 0	62 6
Sub Nigels	25 3*	25 0*	25 0	25 0*	24 9	24 0*
Transvaal Lands . .	23 6A	24 0*	24 0*	24 0*	—	24 6†
Transvaal G.M. Est.	—	15 0*	15 0	15 0*	15 0	15 0*
Van Ryn Deeps . . .	68 0*	68 0	68 0	67 6*	67 3*	67 6*
Village Deeps	16 6*	16 3	16 3*	16 3*	—	16 3*
Western Rand Est..	1 6*	1 6*	1 6*	1 6*	1 6*	—
Witbank Colls. . . .	—	—	—	—	60 0*	—
Witwatersrands . . .	19 0†	18 6†	—	19 0†	16 3*	—
Wit. Deeps	12 3*	12 0*	12 0*	12 3	12 0	12 6†
Wit. Townships . . .	—	—	25 0†	—	—	—
Wolhuters	3 1*	3 2*	3 3	3 2*	3 1	—
Zaaiplaats Tins . . .	12 9	12 9	12 9	12 6†	13 3	13 0*
New States	22 6A	23 0	22 9*	22 9A	23 3	23 3
S. Van Ryns	11 3*	10 6	11 3	11 0*	11 3	10 6*
S.A. Alkalis	31 0*	32 0*	—	32 6†	—	30 0*
Tweefonteins	22 6*	22 6*	22 6*	22 6*	—	22 6*
Tweefontein Def. . .	22 6*	—	22 6*	22 6*	—	22 6*
West Springs	24 6*	25 0	25 0	25 3	25 0	25 3
Do. Options	10 0*	10 6	10 6	10 0*	—	—
De Beers Def.	—	£17*	—	—	—	—

GEORGE ELLISON

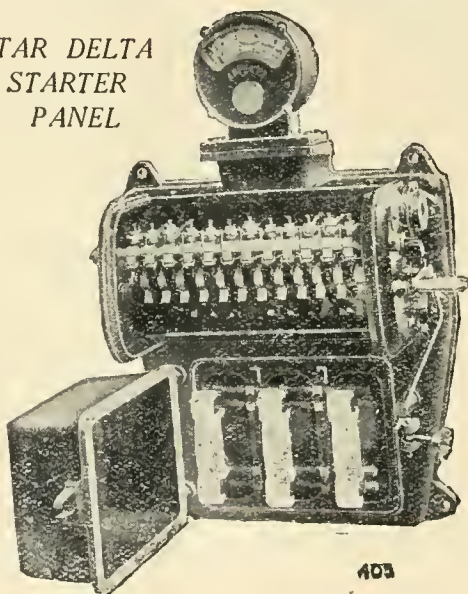
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LEAVES FROM A PROSPECTOR'S NOTE BOOK.

III.—The Capitulation of Ginger O'Keefe.

THE report that Ginger O'Keefe had struck something really big in the Mafungabuzi district created quite a lot of excitement throughout Matabeleland. And when it became common knowledge that O'Keefe had refused an offer made by one of the big houses of twenty thousand pounds for a twelve months' option, a lot of the old hands in the lower Gwelo and Bubi areas packed up their kits and struck out for Mafungabuzi. The district is nothing to write home about. It is warmer even than old Hartley, and it contains fly as well as anopheles, so that it is there possible to pick up S.S. as well as a real nice dose of malaria. All the same there was quite an exodus Sebungwe way. Ginger O'Keefe's great find was the talk of the hour, and one or two hook-nosed people who are not generally addicted to running health risks quietly stole up that way from Bulawayo with a view to spying out the land.

I happened to be in Selukwe at the time and decided to join up with the lower Gwelo crowd. On arrival at O'Keefe's stake we were met by the budding millionaire, who gravely informed us that his claims were called the Heaven block because Rhodesians (or any other tribe for that matter) would find it mighty difficult to enter them.

"I ain't encouraging any visitors," quoth O'Keefe. "Ye've all come on a fool's errand, and if ye'll take my advice ye'll be pullin' out quick. I've pegged out the country fer miles around th' main shrike, and as the overburthen is heavier than th' load on th' mind o' Pontius Pilate ye'll best be goin' home."

* * * *

Ginger had got the whole of his main workings surrounded by barbed-wire entanglements. Here and there were great big mounds that looked perilously like machine-gun emplacements and there were notices all over the place that said: "Trespassers will be SHOT, not prosecuted," "Beware of the Bloodhounds," "Pas op for Spring Guns and Man Traps." Ginger had got together four or five of the biggest toughs in Rhodesia and one could observe them walking around inside the wire entanglements with shot guns and looking very ferocious-like. We could observe, too, one or two nasty-looking dogs and a half-grown leopard tied up by a long chain to a pole. We talked to Ginger about all these aggressive indications and we told him they didn't look at all sociable.

"I'm not whantin' any sociableness," retorted Ginger. "If any ones goes to th' properthy he's liable to meet death in a sudden an' nasty form. The min have instructions to shoot on sight and the dogs and spring guns and ceteras is all tuned up for killin'."

"But you couldn't do it, Ginger!" expostulated Flanagan, who used to be O'Keefe's half-section away back in the lower Gwelo. "Twould be sheer murder."

"Well, I'll murther first an' argufy afterwards," returned O'Keefe, and he strolled quietly away as though to signify that the argument was finished as far as he was concerned and that he had said the last word.

"Well, I'm damned!" we all ejaculated simultaneously. "The pig-faced red-headed son of sin! An' him an old pal of ours!"

Well, we'd come so far and we weren't going to turn back, so we pitched our camp, fixed our buck sails, got up one or two grass huts, and sat down opposite to Heaven. Two of the Yids from Bulawayo joined us, and that night one of them in a fit of daring curiosity invaded Paradise and got shot in the leg by a trap gun for his trouble. He yelled something awful and staggered back to camp bleeding like a stuck pig. We tied his wounds up and cursed Ginger. Although his first victim was a Jew it didn't seem like the true Rhodesian spirit at all at all.

We argued it out that there must be something uncommon good in Ginger's stake, or else he wouldn't have refused twenty thousand for a twelve months' option, and

furthermore he wouldn't have taken such extraordinary precautions to prevent visitors eneroaching on his property. And so we split up into parties and scoured the whole country side for an extension of Ginger's strike. But none of us struck anything. Ginger was quite right. There seemed to be nothing but overburden everywhere; not a trace of a reef, not a sign of rubble or of old workings. Ginger apparently held the key to the situation and was going to hang on to it. When we got to the camp after three days' systematic scouring of the country side we found that a whole host of people had arrived at Heaven's gates and were being lectured by Ginger on the perils of attempting to enter therein. The new arrivals were just as displeased as we had been at the situation. Their tempers were not improved when we told them of our experiences. And when a big consignment of stores, including a large supply of whisky and a Tremain mill with accessory plant arrived there was a general howl of derision and anger.

* * * *

The new chum was a swanky-looking individual with an eye-glass and a manner which suggested that he at any rate should not be debarred from entering the Heaven block. Heaven, in fact, might well have been his home, and his scanty remittances were probably drafted on the Bank of the Almighty.

Rhodesia is always charitable to the new chum, provided he is sufficiently green and raw enough to raise a smile. We all of us regarded the new chum as a tolerable ass. His monocle and lordly speech, his collection of revolvers and all-in-all pocket knives, and his silver cigarette case all helped to provoke a great deal of disdainful mirth. But it was the new chum who enabled us to defeat Ginger O'Keefe. "Let's set siege to the beastly place!" he counselled; and we did. For three weeks we held up Ginger's stores. Not a tin of crayfish, not an ounce of flour, not a drop of whisky entered the Heaven block for twenty-one days and nights. It was probably the lack of whisky that brought about Ginger's capitulation. At any rate he and his toughs were very white and dry when we closed in the cordon and entered the forbidden area. A Mining Commissioner and two B.S.A.P. men entered with us in accordance with instructions received. And there they found about half-a-month's output of all the big mines in Matabeleland! There was no reef on the Heaven block, and drink had prevented Ginger and his fellow I.G.D.'s from camouflaging the thing with the Tremain. Ginger and his mates are now doing eighteen months, and Heaven is quite untenanted. I don't think it ever was a place for angels.

Ginger's mine would have produced an astonishing output of exceptionally pure gold if he hadn't been disturbed. Oh yes, there was a mine there all right. You know the definition of a mine, don't you? It's a hole in the ground owned by a liar.

L.



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HYDRAULIC PROSPECTING FOR TIN.

The Question of Cost.—Rooiberg and Groenfontein Results.— Interesting Discussion.

To the discussion of Mr. E. R. Schoch's paper on "Hydraulic Prospecting at the Rooiberg Tin Mines," read recently before the South African Institution of Engineers, Mr. J. Jervis Garrard, at the last meeting, made the following contribution: Although a matter of small importance not connected with the main object of the paper, I think the value of the paper would be enhanced if the author corrected an obvious error in his description of the geological formation at Rooiberg, where he describes the Rooiberg Series as consisting of "Sandstones quartzites and bands of shales, forming as it were an irregular laccolite in the underlying granite." Such a description of a laccolite is entirely at variance with all accepted geological ideas of such occurrences. The method of hydraulic prospecting outlined in this paper is, I believe, novel as regards the necessity for elevating the gravel owing to the level nature of the ground, otherwise the problem is almost identical with that which was presented at the Groenfontein Tin Mines, when in 1911 a plant was installed to pump the necessary make up water a distance of five miles, lift it 1,200 feet, and then carry out hydraulic operations on the top of the Groenfontein Hill, by means of a centrifugal nozzle pump, using the water in circulation over and over again. In my report of the Transvaal Consolidated Land and Exploration Company, Ltd., in February, 1914, I said: "It is gratifying to be able to report that the hydraulic scheme outlined in my annual report for the year 1909 has now been successful in enabling the overburden to be stripped and the granite laid bare at a cost covered by the alluvial tin recovered in the operation, instead of, as was formerly the case, when working with hand labour, at a cost of from £400 to £500 per month. It is also important to note that these operations have, as I had expected, at the same time resulted in laying bare valuable deposits of ore." In my report of March, 1915, I was able to say: "The main tin producer during the year has again been the Giant Workings discovered by hydraulicing in 1913. These workings produced 3,575 tons of ore containing 174 tons of 70 per cent. concentrate during the year making a total production of 437 tons of 70 per cent. concentrate from these workings since their discovery." It will be seen therefore that this scheme which was identical in its object with the Rooiberg scheme (and similar with the exception that it was not necessary to elevate the gravel) enabled the stripping of the granite to be carried out at a cost covered by the tin recovered, whilst the whole cost of the installation was very amply justified by the discovery of rich deposits laid bare through the employment of this method.

It is unfortunate that the author does not give detailed figures as to the cost of working per cubic yard, as such information would materially add to the value of the paper. In view of the considerable handling of tailings entailed by the method employed, and the very small capacity of the plant, it is evident that these costs cannot be low, and I should like to know whether the elevating of the pulp in the first instance to a greater height than 20 feet had been considered in order possibly to obviate this excessive subsequent handling of tailings. Apparently the amount of circulating water used in the operations only amounts to something between 24 and 42 cubic feet per minute, which at the density of pulp given (2lbs. solids per gallon of water) and at the daily capacity of 100 cubic yards, would mean about 21,600 cubic feet, or about 135,000 gallons per day. It would be interesting to know what the amount of make-up water taken from the storage dam is to enable this circulation to be maintained. I notice that the width of the sluice box is given as eight feet, which is considerably in excess of that which would be dictated by ordinary practice, having regard to the small stream of water employed, and I should be very glad to hear the author's experience on this matter and whether he has made any experiments on varying widths of sluice box which may have led to the adoption of the width finally employed. The author explains that the operation of the sluice

box is stopped for nine hours to stream down the box when full; but he does not say how long it takes for the box to fill. It would seem that this loss of time could be obviated either by means of a parallel sluice box into which the flow of current sands would be diverted, or by throwing out the rough concentrates from the existing box for subsequent dressing in small boxes or tables. No mention is made of the actual quantity of material sluiced, that is, after the larger pebbles have been eliminated, and the only hint at capacity is that it deals with about 100 cubic yards per day, without any information as to the number of hours worked per day. A definite statement as to the actual quantity of ground cut and elevated per horse-power used would also materially add to the value of the paper. In the discussion of this paper it should be borne in mind that presumably the main object of the method employed is to lay bare tin-bearing deposits in situ which would not otherwise be found; therefore, it would not be fair to expect the results to compare favourably with any ordinary hydraulic propositions, where the object is solely to recover the tin from the alluvial ground on a profitable basis; as it goes without saying that in order to treat this proposition as an alluvial one *per se*, the scale of operations would require to be on a very much more extensive one than that indicated in the author's paper, dealing as it does with a matter of something less than 3,000 cubic yards per month, whereas in the case of the Swaziland Tin, for example, we deal with about 100,000 cubic yards per month. It is doubtful from the description if either the cost per cubic yard or the percentage of recovery of the tin would justify the classification of this plant under the heading of a successful hydraulic proposition *per se*. The author is, however, to be congratulated on bringing forward this outline of a method of prospecting which is no doubt capable of a considerably extended application in practice in the case of many and various kinds of ore deposits. Even if the value recovered from the actual operation of the plant does not cover the operating cost, it is still, or should be, the cheapest and quickest method of stripping the overburden to expose the bed rock for subsequent examination, and it is to be hoped that the Rooiberg Company will reap as handsome a reward for its enterprise in this direction as that derived by the Groenfontein Tin Mines.

Kamnassie Irrigation Scheme.

The Kamnassie Irrigation Board has adopted a scheme for the construction of a dam, weirs and canals, according to the plans and specifications prepared by the Irrigation Department. The scheme, which was originally estimated to cost £360,000, for which Parliament had voted the money two years ago, and which would bring 10,000 morgen under irrigation, has now been extended to bring an additional 4,000 morgen under water at an increased cost of £450,000. The dam will irrigate perhaps one of the richest strips of country in the Union, about 40 miles in length, where the alluvial soil is 30 or 40 feet deep and capable of producing any crop, cereal or fruit, grown in the southern hemisphere. The possibilities of the development and exploitation of small holdings is very great. Even in the severest drought, such as the district passed through in 1916, the dam is estimated to hold sufficient water to last for a year. Mr. Patterson, Circle Engineer, was deputed by the Director of Irrigation to meet the Board, when it was decided to make application for the available £360,000, and later on when this amount had been applied for, to get the Director of Irrigation to approach the Minister with a view to placing the extra £90,000 on the Estimates. The work of clearing an area has already begun, but it is not anticipated that the heavy work of construction will be commenced before some months. The Board also decided not to have a resident Government engineer but to appoint one under Board control.

ENGINEERING SECTION.

S.A. INSTITUTE OF ELECTRICAL ENGINEERS' ANNUAL REPORT.

Questions of Standardisation, Safety Measures, and Exhibition of Locally Made Machinery and Appliances.

FROM the annual report of the South African Institute of Electrical Engineers, we learn that Prof. W. Buchanan was appointed as representative on a joint committee of representatives of the South African Institution of Engineers, the Chemical, Metallurgical and Mining Society of South Africa and this Institute, to consider what steps, if any, can be taken to bring about closer working of the three societies by way of joint housing: a common journal for each society's proceedings, or otherwise.

EXHIBITION OF LOCALLY MANUFACTURED MACHINERY AND APPLIANCES.

It has been proposed by the South African Institution of Engineers, in collaboration with the Chemical, Metallurgical and Mining Society of South Africa, to hold an exhibition at an early date of machinery and appliances manufactured locally as an outcome of the war. Prof. J. H. Dobson, Messrs. R. F. Botting and E. V. Perrow have been appointed as representatives on the joint committee to consider the proposal in all its bearings.

STANDARDISATION OF ELECTRICAL MATERIALS.

In the annual report last year it was announced that an Electrical Section of the South African Engineering Standards Committee had been formed to deal with the question of standardisation of electrical materials in this country. It is understood that an interim report, covering the work of the committee, will be shortly issued.

SAFETY PRECAUTIONS COMMITTEE.

During the year a committee of seven members of the Institute was appointed to continue the framing of recommendations for safety in connection with the use of electricity, and the Transvaal Chamber of Mines appointed its sub-committee of consulting electrical engineers to collaborate with the Institute's committee in framing recommendations for safety in mining electrical work. Three sub-committees have been appointed to consider recommendations for safety in connection with transmission lines, motor installations, surface and underground hoists, electric traction, etc., and the results of their labours will be published in due course.

GOLD MEDAL FOR BEST PAPER—1916.

The gold medal for the best paper read during 1916 was awarded to Mr. Bernard Price for his paper entitled "The Electrical System of the Rand Power Companies, with special reference to Methods of Operation and Experience." At the ordinary general meeting of the Institute held in November, the Hon. F. S. Malan, Acting Prime Minister of the Union, presented the gold medals awarded for the best paper read in 1915 and in 1916.

V.F.P. PREMIUMS.

The Victoria Falls and Transvaal Power Company, Ltd., has generously offered the Institute an annual award of £25 for competition for good work to be done by members of the Institute. The following are the conditions which it is agreed shall govern the awards:—(1) The said annual sum shall be placed to the credit of a fund upon which the Council of the Institute may draw from time to time for

the purpose of granting premiums of an amount not exceeding £25 each to members of the Institute of any grade, in recognition of a meritorious contribution or meritorious contributions by such members to the proceedings of the Institute during a given calendar year. (Note.—The term "contribution" is intended to cover not only original papers, but any technical contribution to the proceedings of the Institute.) (2) Each of such premiums shall be called "£... V.F.P. Premium," and the value of the premium shall be stated in each case. (3) Such premiums shall be awarded annually, but the Council shall not be obliged to grant any premium unless in its opinion the contributions of a particular member or members to the proceedings have attained a standard of value which, in the opinion of the Council, merits such recognition. (4) The member who gains the Institute's gold medal for the best paper presented during a year shall not be eligible to receive a V.F.P. Premium for that year. (5) All such premiums, of whatever value, shall be given in the form of scientific or technical books and/or instruments purchased by the Institute.

S.A. Railways and Harbours.

IMPORTANT NEW WORKS AUTHORISED.

Verster.—Opening up as an attended station.
Cape Eastern Main Line.—Lengthening of certain main line passenger platforms.
Bethlehem-Harrismith.—Raising of New Year's Spruit Bridge by five feet.
North Coast Line.—Reconstruction of Inyezani Bridge.
Hamanskraal.—Provision of new station building and an additional siding.
Mossel Bay.—Removal of creosoting plant from Knysna.
Salt River.—Provision of new electrical workshops.
Nelspruit.—Alterations to yard and buildings.
Mooi River.—Provision of three brick houses for staff.
Great Brak.—Provision of new quarters for stationmaster, and conversion of present quarters into station accommodation.
Caledon.—Provision of new rest rooms in brick.
Firgrove.—Erection of new station buildings and platform.
Sarnia.—Provision of a house for pumpman.
Rosetta.—Provision of a house for station foreman.
Kazerne.—Metalling of coal sites.
Breyten.—Erection of four new cottages.
Durban.—Provision and installation of new machinery for workshops.
Durban.—Extension to iron foundry and equipment for same.

Metal turnings and borings from lathes at mines are generally thrown away, unless they are sold as old metal. This material always contains a good deal of high-grade oil, which should not be allowed to go to waste. The turnings may be put in a sheet-lined receiving truck, having a sloping bottom to allow of their draining. Then they are placed into an oil separator—steam heated or centrifugal type—which reclaims most of the remainder of the oil. According to the *Mining and Scientific Press*, San Francisco, a large milling machine company at Cincinnati recovers an average of 100 gallons of oil daily.

THE SWIFT DRILL ATTACHMENT.

The Device Described—Tests at Van Ryn Deep and Crown Mines.

IN our last issue we referred briefly to the Swift water-feed attachment for piston drills, and in view of the importance of any device which can reasonably claim to abate the dust evil in the mines we promised to give further particulars of the invention. During the week a representative of this paper had the opportunity of inspecting the attachment (which has been locally made) at an engineering works in town. A steady flow of water which can be regulated at will is obtained through the use of this attachment and the simplicity of the device is particularly noteworthy. We reproduce hereunder a photo of the attachment fitted to a Holman drill with the water feed in operation.

THE ATTACHMENT DESCRIBED.

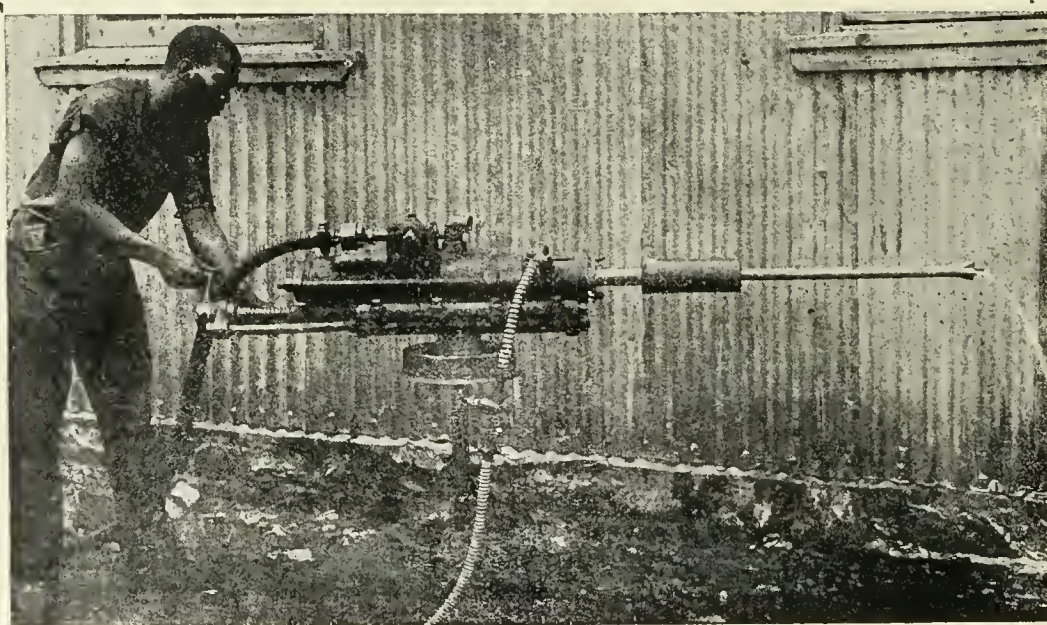
The device consists of a jacket that is held in place in the front end of any piston drill by the usual side rods. The water enters this jacket from a hose attachment and is fed to the piston—bored hollow up to a certain point—by means of a hole at right angles to the central hole in the bored piston, this feeding hole getting its water from the jacket during the whole stroke of the machine. This jacket is

put in place and tightened up. This converts the dry drilling reciprocating drill into an axially fed water drill while retaining the simplicity and advantage of the piston machine.

VAN RYN DEEP AND CROWN MINES TESTS.

Tests of the machine have been carried out in the Van Ryn Deep by the Miners' Phthisis Prevention Committee, and these indicated that "the attachment was of considerable use in keeping down dust, and it should certainly effect a fair saving in water as the chuck boy will turn off the water tap on the machine in preference to letting the water squirt over him, and so save water instead of keeping himself dry by throwing the hose full open on the floor of the stope where it lies wasting while he gropes around for another jumper."

A further test was carried out on the Crown Mines on 2½ inch Holman drills fitted with the Swift water-feed attachment by a representative of the Miners' Phthisis Prevention Committee, who reported, *inter alia*: "From these figures it does not appear that the drill even on back



THE SWIFT DRILL ATTACHMENT.

made watertight with a piston at both ends by means of ordinary packed glands in stuffing boxes that can be tightened up in the usual way as required. At the back end of the jacket there is a close fitting "weeping plate" that removes any water that might have a tendency to work back along the piston rod, and at the same time allows any air leaking from the front end of the machine to escape without mixing with any of the water and so preventing "fogging" or the creation of mist whilst the machine is working. The water is led into the hollow jumper by means of a chuck tapered to fit the piston at one end, and for the drill shank at the other end, and by means of a recessed ring communicates with the small hole in the side of the tapered shank, permitting a flow of water through the steel in any position in which the jumper may be inserted. The chuck has a central hole for drifting the jumper out when changing drills, which does away with the wedge and U bolt with its nuts. In order to attach this water feeding device to any piston drill all that is necessary is to draw out the present chuck and taper the end to take the new chuck, bore the piston for about 12 inches with a ⅜ inch hole and drill another ½ inch hole at right angles to the axial hole. The water attachment is now slipped on and the side rods

holes makes sufficient dust to alter the small quantity made by working in the stope and in the air coming into the stope from other portions of the mine."

ADVANTAGES CLAIMED.

It is claimed that by using this device there is practically no dust, as shown by tests made by the Miners' Phthisis representative. This consequently means no miners' phthisis as far as drilling operations are concerned. Other claims are: No fogging whatever, as water cannot possibly enter the cylinder on account of it being admitted into front end of piston rod, through water attachment being attached to the front end of the machine in place of back end, as is customary with many other devices. Great economy in the way of saving steel, as it is unknown for steel to break while being used in this machine, possibly on account of steel being kept at uniform temperature, etc. Reciprocating machines equipped with the Swift patent water head can be used in any position, either back or underhand drilling. The working cost is extremely low in the way of spares or renewals. There are no chuck bolts, bushings or cutters required. Jumpers are changed instantly by one

light tap with the hammer, as there are no bolts to be released. Quite a big saving of air at the front end of the machine while in use, as the attachment with its packing arrangement prevents any air whatever from passing through the front end as usually occurs with the piston drill when working dry. Increased footage probably from 15 to 20 per cent., as stated by men using the converted drill, or, in other words, the amount of footage accomplished when using the piston drill dry can be done in from 15 to 20 per cent. less time when equipped with Swift water head, which means, of course, a large saving in air. The Swift water head can be attached to any piston drill at present in use, consequently no scrapping of old drill need occur. The machine when converted in running costs does not exceed fourpence per working shift; this occurs in the way of renewal of a couple of turns of half-inch engine packing which requires to be effected possibly once in every six or eight working shifts and is put into position by the drill operator in from five to ten minutes by slackening two $\frac{1}{2}$ in. gland bolts and again tightened in position with very small pressure. In using the Swift water attachment there is a great saving of water as compared with the old system of wetting the hole with an open $\frac{1}{2}$ in. hose, as the inlet water hole in the head of the patent is only $\frac{1}{4}$ in., consequently we should say there is possibly from 50 to 75 per cent. water saved in the two methods. The device has been employed at the Crown Mines for the past three months.

QUESTION OF THE CASTINGS.

This attachment is referred to in the last annual report of the Government Mining Engineer. Col. Bottomley, Inspector of the Boksburg District, writes: "The water-fed reciprocating drills operating on the Swift patents were tried on the Van Ryn Deep during the year. The patent was fitted to a Holman machine with locally cast head attachments to accommodate the water feed. Up to the time of writing not much progress has been made, as the castings were too frail and have broken under the strain. It is doubtful whether the extra weight of the blow afforded by the heavy reciprocating machines even with a water feed will equal the effect of the lighter but very much more rapid striking of the present hammer-type water-fed drills. The amount of dust created when using the Swift attachment is negligible and this is its chief recommendation." We are given to understand that since this report was written much improved castings have been manufactured locally and that the disadvantages referred to above have now been overcome.

Self-Luminous Paints in War and Peace.

Self-luminous paints were largely used during the war for the dials of watches and instruments, for trench signs, for buoys, and many other purposes. Very little was known of the best composition of such paints and the best way of using them until Professor Clinton, of University College, London, and Mr. J. H. Dow, of the Illuminating Engineer-

ing Society of Great Britain, carried out tests with special forms of electric glow-lamp photometer. They used paints made of radium bromide and zinc sulphide, which at first show a quick rise in the light given off, followed by a slow decay. They found that if more than a certain minute proportion of radium was used, the light fell away so rapidly that no advantage was gained. They also found that the same thing happened if the paint was laid on too thickly. Owing to the high cost of radium these results enabled big savings to be effected in the expenditure on self-luminous paints during the war. They will be no less valuable in peace, when the use of these paints is developed for the illumination of instrument dials, electric switches, signs and signposts, buoys, and other things where it is desirable to provide permanent visibility.

TWENTY-FIVE YEARS AGO.

(From the S.A. Mining Journal of February 24, 1894.)

An account of the proceedings at this week's meeting of the Rand Mines, Limited, together with the directors' first annual report and accounts for the period ending 31st January last, Mr. H. C. Perkins' report and plan showing the position and extent of the company's holdings, will be found elsewhere in our present issue. To Mr. Perkins' report we would direct special attention. We regard it as one of the most important documents ever published in connection with the Witwatersrand, not even excepting the famous report issued by Mr. Hamilton Smith at a time when deep levels were practically unknown.

It is evident from the directors' and manager's reports for the half-year ending 30th December last, recently presented to Paarl Central shareholders, which will appear in full in our next issue, that the transition stage through which the company has lately been passing is now practically terminated, and that with the re-starting of the mill it will enter upon an entirely new phase of its career. We have frequently referred in recent issues to the extensive alternations which have been made in the surface equipment of the property, and we are gratified to observe from Mr. Little's report that below ground an equal activity has been displayed.

CROWN REEF.—The new mill will start upon the first of next month, when the total crushing capacity will be 180 stamps. As this will consume some 750 tons per diem, and as only one level is at present completely developed, work with the drilling plant will require to be actively pushed forward, so as to enable stoping to be carried on from several levels at once as soon as possible. With only a limited number of stopes available, there will always be a danger of the ore reserves proving insufficient, and although since Mr. Webber has assumed the management good progress has been made, and, notwithstanding the fact of its being possible to shortly considerably increase the quantity of ore in sight, we are inclined to believe that it will soon be found politic to discontinue milling with the present 60 stamps in order to give the mine a better chance of gaining upon the mill.

The monthly meeting of the members of the Mine Managers' Association was held on 19th February in the board room, City Chambers. There were present: Messrs. J. H. Johns (chairman), T. J. Britten, H. L. Webster, T. J. Macfarlane, Leonard Acutt, A. M. Cooke, D. S. Johnston, Chas. Gluyas, Geo. Alf. Goodwin, Chas. Hoffman, C. Spencer, J. T. Milligan, E. Fern, J. Pascoe, J. L. Deroos, H. W. Miller, E. Button, W. Blane, J. James, J. J. Fern, Saner, Stanley Clay, and C. J. Watson (secretary).

The market maintained a strong and active appearance. Gold Fields and Charters have suffered a slight relapse. Mulder's Farms continue to improve.

Robinson G.M. Co.'s January profit £27,886. Costs, including development and debts on plant, 39s. per ton.

The largest and most varied
stocks in South Africa of

IRON and STEEL
BARS, ANGLES, etc.

COPPER and BRASS
SHEETS, RODS and TUBES.

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THE RECLAMATION OF THE KALAHARI.

Professor Swartz's Big Engineering Scheme.—Proposal to Alter African Geography.

PROFESSOR E. H. L. SWARTZ writes to the Cape papers as follows:—"Capetown is, I believe, undergoing one of the recurring periods of water-shortage and every effort is being made to secure further supplies. While these local schemes will alleviate the distress, no amount of reservoir water will relieve the general drought conditions that prevail every summer, that wither the gardens and contribute a considerable amount of discomfort to the population. There is a deficiency of moisture in the atmosphere, caused by the fact that the continent behind the Peninsula is itself dry, and the sea, chilled by the Benguella current, does not give off sufficient moisture to be of use to the warm land. If South Africa were to be supplied with an adequate amount of atmospheric moisture, the distressing conditions in Capetown in summer would be done away with. Although, therefore, Capetown is so far from the Kalahari, my scheme for filling up once more the lake beds in the Kalahari is of immediate interest to the people of Capetown. I am anxious that every section of the population of South Africa should be made to realise that this scheme is within the realm of practical politics and that at present the life's blood of the country, its water, is being drained away from it, whereas, at a comparatively small cost, this water can be turned back into the country and added to the general stock. The scheme has been now published in the *South African Journal of Science*, October number, so I need not explain it here, but as I have just returned from investigating certain points connected with it on the western side, I should like to make clear one or two facts that were impressed on me. The most important is, that, if nothing is done on the lines I have suggested, a very large tract will soon be added to the waterless regions of South Africa. The Cunene used to flood Ovamboland from north to south, and the country depended on these floods for its water supply; the annual rainfall is quite insufficient to support the tropical vegetation, being only 18 inches, taking an average of the last 12 years, and it has fallen as low as 9 inches. The Cunene River, cutting downwards every year, has ceased to flood the southern portion of the country, and in a few years more, if left alone, will not only cease to spill over at all, but will drain the country it used to supply. The Kalahari Expedition into what was then German West passed through miles of dead forest; recently, in the unexplored country between Ovamboland and the Okavango River, I cut my way for days through a forest of great teak trees, half of which were dead. It is bad enough to have the Kalahari acting as a furnace in the centre of the country and drying the air; it will be much worse if an area about half as much again is added to it. What I want to see done is the restoration of the former lakes in the Kalahari, so that those regions that are too far from the sea to receive sufficient moisture from it should have a source of supply nearer at hand. The Kalahari lakes were the southern end of the string of great lakes that exist in the centre of the continent, and which supply Central Africa with sufficient moisture to maintain the vegetation and the teeming millions of men and animals that live upon it. If we wish this country to support even its present scanty population, we must stop the rivers from robbing the land of its accustomed supply of water, and turn them into their old lake beds. Another point which impressed me was the extraordinary flatness of the country between Ovamboland, which renders the diversion of the rivers possible. A great deal has been made by my critics of the uncertainty of the heights given on the maps in this region, which have all been taken by the barometer or the boiling-point thermometer, and my experience on my trip, when I took hourly readings of the barometer, confirms this. However, I obtained the relative heights in another way. For instance, between the Etosha Pan and the Okavango there is a river, the Ovambo, into which the Okavango in high flood pours; such a flood occurred in 1917, and at Tsintsabis, on the Ovambo, the river was full from bank to bank, yet the current was so slow that on throwing a stick into the middle

of the river, one had to watch for a considerable time to see which way the current would take it. In other words, the difference in level between the Etosha Pan and the intake from the Okavango, a distance of 250 miles, was so slight that a small readjustment of level would make the river flow the reverse way. Still one more point I think is worth mentioning. The distance between Tsumeb and Ondonga is 170 miles; along the whole road there are strewn the skeletons of the Ovambos that perished in the famine of 1915-16. This stretch is in uninhabited country, so it has been impossible to bury them, and there they lie witnesses, with the dead trees, of a terrible state of affairs. The Government at the time did everything it could to bring up foodstuffs to help the people, but it could not reach everyone, and thousands died. If it is only to preserve the Ovambo nation from a similar famine, my scheme is worth going in for, because the Ovambos are a fine, unspoiled people who will be an invaluable asset to the Union. I have been travelling about South Africa now for 25 years, and I have seen even in that time how it has gone back in regard to its water supply; arid conditions are increasing and irrigation alone will not help, as the intense dryness of the air causes the irrigated land to become brak. There is much to be done, and many difficulties to be got rid of before my scheme can be carried out, but if I can manage to make people realise the seriousness of the case, the first stage, the thorough investigation of the scheme, may be reached.

Sir Douglas Haig paid another well deserved tribute to the tunnelling companies in his final dispatch, published recently. "The work of the tunnelling companies (he writes) has demanded, equally with that of the field companies, great courage and skill. In the period from the 8th August to the termination of hostilities nearly 14,000 German mines and traps of various descriptions, totalling over 540 tons of explosives, had been discovered and rendered harmless by the different tunnelling companies, while a further amount of nearly 300 tons of explosives had been withdrawn from our own demolition charges and mine-fields."

Nissen Stamps at the Falcon.

Head Wrightson & Co., Ltd., of Stockton-on-Tees, has received a letter from Mr. H. T. Brett, the manager of the Falcon gold-copper mines, Rhodesia, giving particulars of the actual breakages in the Nissen stamps during the four years that they have been at work. The following are the figures: Number of stamps, 26; total ore crushed, 690,000 tons; average stamp duty per day, 19.5 tons; aperture of screens, 0.146 in.; average height of drop, 8½ ins.; average drops per minute, 98; breakages of mortar boxes, none; breakages of cam shafts, 2; breakages of stems, 1; breakages of cams, 7; breakages of tappets, 2; cam pulley belts renewed, 3; motor driving belts renewed, 2. As Mr. Brett says, the figures are highly satisfactory and probably constitute a record.

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THREE SEAS BRAND.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Budget and the Mines.

It is surprising that the Budget just promulgated is so satisfactory, although there is an estimated deficit for the coming year 1919-20 of £1,535,000. The increased taxes on imported spirits and S.A. brandies, etc., with a re-arrangement of excess profits duties, also a 10 per cent. export tax on diamonds instead of 5 per cent. as at present, give an aggregate total of £1,395,000, thus leaving only £140,000 deficit, at which it would remain. Certainly it was almost hopeless to look for any relief for the mining industry, and none has been forthcoming. However, it is sad to relate that we showed a decrease of £2,500,000 worth of gold for the year 1918 as compared with 1917, the decrease being chiefly attributed to the influenza epidemic. As against this there is one satisfactory set-off in the official statement of the Minister, and that is the grade of the Witwatersrand mines showed an improvement of about 9d. per ton. But the dividends showed a decrease by £1,228,023 for 1918. There was a decrease in the diamond output of over £600,000, also attributed to the influenza outbreak. Coal had a decrease of 467,000 tons, but the decrease in value is only £19,600 owing to better prices. Copper fell from £1,000,000 in 1917 to £372,000 in 1918, no doubt chiefly in the absence of shipping facilities. The mining industry gave employment on an average to 32,000 whites and 263,000 coloured people for 1918.

S.A. INDUSTRIES AND THE WORLD'S LABOUR.

The Minister touched lightly on the very important subject of South African industries considering they represent a greater money value than our gold and diamonds. He said that he anticipated a greater output for the completed year 1918 as compared with 1917. He also added a most important and significant statement that the tariff revision was being investigated by the Advisory Committee of Industries and Science in anticipation of a general revision of Customs (import duties) which had become imperative. It is a pity the statement did not go a little further so that an idea could be obtained as to when the revision of duties is likely to come about, as the manufacturers in such an inland centre as Johannesburg are very much interested and concerned in this, to them, a matter of life and death, as regards extending their manufactories. However, whatever we get from the import duties will be small as compared with the labour conditions. Take, for example the building employees' strike, which is not of great consequence as compared with manufacturing, as there is no overseas competition about building a factory or a house in Johannesburg, whereas the world's labour market in a great measure controls the price of, say, miners' boots for which we have worked up a good business in the South African commodity. Hence if labour goes up in Northampton in proportion to that in this country, the protection afforded to us during the war will to a great extent remain. Another big protection for South African industries is the coloured labour more particularly employed in all coast factories. This is surely unfortunate from an ideal white labour position, but there it is and seemingly must remain.

THE TREND OF BUSINESS.

It is still unfortunate to report that business is on the dull side, although some brokers consider there is a steadier feeling in mining circles. Perhaps not for the immediate

future, but the several moves towards rather gigantic operations on the Far Eastern Rand are very cheering regarding the prospective outlook for the gold mining industry. There is little fear of a miners' strike, and undoubtedly the cost of stores, freights, timbers and other things have and will come down. It is pretty well certain that the poorer grade mines will keep going, as the E.R.P.M. has got into better ore, as well as others, and undoubtedly in the economic conditions for stores consumption and maybe improved discipline in the actual working of the mines, much has been accomplished. For the immediate present the trouble is for trade purposes that the mines are now more than ever largely using from their reserve stores, which in a degree may last throughout the present half year. However, there are always sorting up lines required, and these will increase from week to week. Another reason for dull times is the building strike, as timber and roofing iron have decreased in prices, simply because of the practical stoppage of buildings in Johannesburg and the Reef.

STRETCH AND SLIP IN BELTS

**Costs the Mines many
Thousands a Year.**

This Loss should, and can be
avoided by using only proved
Good Belts, or in other words
"TULLIS BELTS."

"Chonata" BRAND Balata.
(Driving and Conveying)

"St. Ann's" BRAND Leather.

"Swan" BRAND Waterproof.
(Single, Double and Treble)

"Homogene" BRAND Laminated.

"Viking" BRAND Launder Lining.

TIMBER AND GALVANISED IRON.

There is a little secret as to why timber has decreased in value, not because of the strike so much as that a number of shippers in London or the Baltic have speculated by sending timber to South Africa to be sold at our coast ports. Unfortunately for them the armistice came whilst the timber was on the water, and now most of it is at the coast because the shippers had not sold it, which they should have done in the ordinary way of business to timber merchants, but they speculated and so got caught. However, they are said to be wealthy people and can hold on, as it is said that prices in the Baltic are hardening, but against this there is said to be a lot of timber ships offering at lowering freights. The prices to-day in Johannesburg are 1s. 8d. per foot for deals all round, 9½d. for flooring, and 6½d. for ceilings. Galvanised roofing iron, 1s. 6d. per ft. for short lengths and 1s. 7d. for the longer. Flat galvanised is 65s. per 100 lbs. Doors, windows, casements and house joinery are just a shade easier in price through the demand being so poor. Naturally, the architects are not calling for tenders whilst the strike is on. By the way, the Government sold some timber plantations and they came out at £10 nett per annum per acre. That is from the time the trees were planted some thirty years ago until they were sold.

ASBESTOS.

The representative of an overseas asbestos company states that he has a very large number of samples submitted to him for examination, with the view to purchase or advice. The best so far has come from the Carolina district. As a rule the various samples are too brittle to work into a woven state, but he has hopes that just the right thing will come along, now there is a demand. The imported article is again coming in freely and is in demand notwithstanding the higher values. There is a quantity of South African asbestos boiler covering used, but the mixture is slightly lacking as compared with the imported article, but that is hoped to be remedied now importations of everything is allowed and the particular ingredients wanted can soon be obtained. The party in question is enthusiastic as to the future of the asbestos industry, both for importation and South African.

ELECTRICAL MATERIALS.

There are no alterations in quotations this week. Stocks are still coming in freely from Britain, America and Japan. Household lamps have been steadied in price, as evidently the cutting of rates has been more or less controlled by the association concerned. It is expected that prices of other materials such as wirings, switches, tubing, and such like may come down shortly, because of competition from so many quarters, including Holland and perhaps Belgium, etc. The strike is affecting the electrical trade considerably, not only in Johannesburg but from the country districts. The masters are rather pleasantly concerned, as if the strike keeps on any lengthy period they will be able to restart contracts on a lower plane of values.

IRON, STEEL AND MACHINERY.

A representative American importing firm has not received any orders in Johannesburg for about four months, or since the German Government opened peace negotiations. Its New York cable received on Tuesday from the manufactory stated that no new orders are available in the United States. Further information from that source also reports that Capetown is so full of iron, steel, machinery, and other mining materials that private owners of wharves or warehouses have increased their charges for storage and the harbour authorities are using great pressure upon consignees to clear the goods coming in so fast from America, Canada and Britain. The information from Durban is somewhat similar, as the shipping people there had to take the risk on the beach for storage purposes. The wholesale price of wire nails is 52s. 6d. per 100 lbs. for 6 x 3 and 6 x 4; 9 x 9, 72s. 6d.; 2 x 12, 74s.; 2½ x 12, 75s.; 4 x 8, 65s.; 2½ x 10, 85s. No. 14 gauge of baling wire, 57s. 6d. Round-nose shovels, 75s. doz.; square-nose shovels, 102s. 6d.

Black piping, ½ in., 4d.; ¾ in., 5d.; 1 in., 7d.; 2 in., 1s. 7d.; 3 in., 3s.; 4 in., 4s. All restrictions about making and handling wire ropes all cancelled by the British Government. Plumbago crucibles are 6d. lb. instead of 6½d. only because stocks are heavy and competition is acute. It is said that through produce merchants and jewellers' dabbling in mining hardware materials that some lines are cheaper in Johannesburg than in Britain and America. Nevertheless when these speculative stocks are absorbed, prices will obviously steady themselves.

OILS, COLOURS AND SUCH LIKE.

Glycerine is the outstanding feature, as sales have taken place as low as 3s. 6d. for stock that cost 6s. 4d. to land in pre-armistice times. Obviously when that was signed the various Governments demands for munition making suddenly dropped, hence a loss, as it is anticipated that glycerine can be now imported and landed here at about 2s. 6d. lb. Vaseline has also declined to 3s. 6d. per dozen wholesale. Linseed oil is rather an unknown quantity, as a responsible broker said that he had 600 cases of raw to sell at 70s. per case of 2-4's. There is plenty of plate glass available at 7s. 6d. per square foot. Window or plate, 1s. 6d. for 16 oz. and 2s. 6d. for 21 oz. Bevelled mirrors, chiefly for furniture is 8s. 6d. per foot, Johannesburg manufacture. Practically only doing country orders as the glaziers and painters are on strike. During the week there was a little flutter in castor oil, as several brokers and others were asking for samples and quotations for 7,000 gallons. It is understood that tenders ranged from 70s. to 72s. 6d. for 2-4's, but it cannot be ascertained if any sales took place.

MINING MEN AND MATTERS.

We understand that good results are being secured at the Ferreira Deep Mine by the employment of a new type of water feeding attachment which is fitted to rock drills.

* * * *

There will be a meeting of the Prevention of Accidents Committee in the Council Chamber of the Transvaal Chamber of Mines on Tuesday next.

* * * *

Reports are current that important changes are about to take place in the technical control of one or two of the leading houses and also at certain large mines in close proximity to town. We refrain from going into particulars at the moment, but expect that an important pronouncement will be made in the near future.

Destruction Tests on Electric Plant.

Tests to destruction are occasionally used in engineering works to discover how much ill-treatment a machine will stand and which part is really the weakest. During the war every electric power station in Great Britain has been subject to very much the same kind of treatment. Thanks to the tremendous demand for electric power in munition works (ninety-five per cent. of these works were driven electrically) all the plant in the generating stations—boilers, dynamos, switchgear, transformers, and mains—was overloaded to a pitch which might well have meant destruction. The manner in which the plant stood up to this long and exacting ordeal is a magnificent proof of the sound design and construction of British electrical machinery and appliances. The difficulties were increased by the fact that, owing to the night and day demand, it was generally impossible to overhaul the plant. In one typical case most of the boilers in the station had not been cleaned for a year. Now that this tremendous strain is relaxed, British engineers realise that their electrical machinery has done better than ever they, in their most sanguine moments, would have expected it to do.

PROGRESS ON "GOLDFIELDS" MINES.

Latest from the Simmer and Jack, Robinson, Simmer Deep, Jupiter and Sub-Nigel.

SIMMER AND JACK PROPRIETARY MINES, LTD.

The following is a summary of the operations of this Company for the quarter ended 31st December, 1918:—The development footage accomplished during the quarter amounted to 1,446 feet, the footage sampled being as follows: Main Reef—Footage sampled, 412 feet; reef width, 30 inches; reef value, 9.3 dwts. Main Reef Leader—Footage sampled, 60 feet; reef width, 15 inches; reef value, 5.5 dwts. South Reef—Footage sampled, 91 feet; reef width, 29 inches; reef value, 11.7 dwts. Tons milled, 144,500. Working profit (including sundry revenue), £18,326, less, however, £3,728, appropriated during the quarter in respect of special expenditure due to war, contributions to Miners' Phthisis Compensation Fund, additions and renewals fund, Government taxation, etc.; gold in reserve, £4,583. The following paragraph appears at the foot of the Simmer and Jack, Robinson Deep, Simmer Deep and Jupiter reports: Through influenza native recruiting came almost to a standstill, resulting in great depletion of labour complements, thus very seriously curtailing and embarrassing operations. Towards the end of January a very gratifying recovery in the rate of recruiting set in within the Union. Owing to an outbreak of influenza in Portuguese East Africa recruiting operations have been temporarily suspended, but it is hoped will be restored at an early date.

ROBINSON DEEP, LTD.

The following is a summary of the operations of this Company for the quarter ended 31st December, 1918:—The development footage accomplished during the quarter amounted to 1,591 feet, the footage sampled being as follows: Main Reef—Footage sampled, 31 feet; reef width, 44 inches; reef value, 3.5 dwts. Main Reef Leader—Footage sampled, 650 feet; reef width, 21 inches; reef value, 22.2 dwts. South Reef—Footage sampled, 318 feet; reef width, 23 inches; reef value, 14.9 dwts. Tons milled, 120,000; loss on working (including sundry revenue), £10,212. Appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, Government taxation, etc., including also interest on joint loans from the guarantors, amounted to £9,918. Gold in reserve, nil. The results for January and February will be still further impaired by having to close down No. 1 shaft for repairs necessitated in consequence of rock pressure.

SIMMER DEEP, LTD.

The following is a summary of the operations on this Company for the quarter ended 31st December, 1918:—The development footage accomplished during the quarter amounted to 1,258 feet, the footage sampled being as follows: Main Reef—Footage sampled, 683 feet; reef width, 37 inches; reef value, 9.3 dwts. Main Reef Leader—Footage sampled, 196 feet; reef width, 28 inches; reef value, 9.3 dwts. South Reef—Footage sampled, 167 feet; reef width, 23 inches; reef value, 11.3 dwts. Tons milled, 130,000. Loss on working (including sundry revenue), £9,223. Appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, interest on debentures, debenture quarantors' remuneration, debenture trustees' fees, etc., amounted to £11,298. Gold in reserve, nil. The grade of ore milled has not been quite as good as expected. Moreover, working costs increased by over 1s. per ton, due largely to new installation of jackhammers and accessories. At meetings of the First and Second Debenture Holders, held in London on 31st January, 1919, the necessary resolutions sanctioning the creation of £150,000 prior lien stock, £100,000 of which is to be issued as and when required, were passed. The issue is guaranteed by the Consolidated Gold Fields of S.A., Ltd., free of charge or commission, and will be offered for subscription to the First and Second Debenture Holders in due course.

THE JUPITER GOLD MINING CO., LTD.

The following is a summary of the operations on this Company for the quarter ended 31st December, 1918:—The development footage accomplished during the quarter amounted to 1,080 feet, the footage sampled being as follows: Main Reef—Footage sampled, 574 feet; reef width, 39 inches; reef value, 7.4 dwts. Main Reef Leader—Footage sampled, 89 feet; reef width, 35 inches; reef value, 12.8 dwts. South Reef—Footage sampled, 124 feet; reef width, 34 inches; reef value, 8.5 dwts. Tons milled, 65,700. Working profit (including sundry revenue), £602, less, however, £2,767 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc. Gold in reserve, nil.

THE SUB-NIGEL, LTD.

The following is a summary of the operations on this Company for the quarter ended 31st December, 1918:—The development footage accomplished during the quarter amounted to 2,380 feet, of which a distance of 1,585 feet was advanced on reef. 1,585 feet were sampled, of which 515 feet gave 11.9 dwts. over a stoping width of 42 inches, whilst the average of the balance of footage sampled was not within the pay limit. Tons milled, 28,750. Working profit (including sundry revenue), £23,701, less, however, £5,207 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc. Gold in reserve, £13,463. Whilst shortage of native labour continues, some shortage of tonnage to the mill is to be expected, the policy during the acute shortage of native labour is rather to reduce the tonnage to the mill than to curtail development. During the quarter payable reef was encountered on the western side of the large dyke in the 11th level winze E. shaft for a distance of 50 feet, after which unpayable ground was met with, work thereon was discontinued owing to shortage of native labour and the abnormally high cost of development in this isolated section. Recent development values on the extension of chutes have been irregular, resulting in a lowering in the tonnage and grade of payable ore being exposed. The Consulting Engineer advises that owing to the position of development at various points, he is of opinion that it is hardly to be expected that any marked improvement will take place for the current year, although considerable advance is to be anticipated thereafter.

SOUTHERN VAN RYN REEF G.M. CO., LTD.

Preparations are under way in connection with the commencement of sinking the new vertical shaft.

The payable ore reserve at 31st December, 1918, was estimated at 2,368,000 tons of an average assay value of 9.3 dwts. per ton over an average stoping width of 61 inches. This is an increase of 48,000 tons as compared with the previous estimate, the average assay value of the total being 0.2 dwts. per ton lower over the same stoping width. The tonnage developed during the half-year ended 31st December totalled 248,000 tons of an average assay value of 10.5 dwts. over 64 inches stoping width.

Springs Mines Ore Reserves.

The payable ore reserve at 31st December, 1918, was estimated at 2,718,000 tons of an average assay value of 8.7 dwts. per ton over an average stoping width of 68 inches. This is a decrease of 246,000 tons as compared with the previous estimate, the average assay value of the total being 0.2 dwt. per ton lower over the same stoping width. The tonnage developed during the half-year ended 31st December totalled 141,000 tons of an average assay value of 11.34 dwts. over 67 inches stoping width.

Brakpan Mines Ore Reserves.

Company Meetings.

CASSEL-CLYDESDALE COMBINE.

Agreement Confirmed.

Mr. J. Dale Lace presided at a special general meeting of shareholders in the Cassel Coal Company on Feb 17, and submitted the proposals for the amalgamation of the company's ground in the Far East Rand with the adjoining ground belonging to the Clydesdale Collieries. Mr. Lace, in addressing the meeting, said:—

You have been called together today to decide upon a proposal to amalgamate that portion of your property which is situated in the Far East Rand mining area with that of the Clydesdale (Transvaal) Collieries, Limited. The proposal has no reference to your large coal-bearing areas in the Middelburg district, now being worked by us. The notice convening this meeting, and the circular which accompanied the notice, describes the details of the proposed amalgamation, but for the convenience of those present I will shortly repeat the important features. The properties of both companies adjoin each other. They are situated in the north-west portion of the Farm Daggafontein. No 25, district of Boksburg. The two properties are of similar extent, the area in each case being 635 acres. They thus form a compact block of 1,270 acres, which is bounded on the west by the Mynpacht of the Springs Mines, Limited, which is now being so successfully worked by the company of that name.

High Values.

We have known for years past that these two properties are of high gold-mining value. What has deterred us from exploiting them is the fact that neither separately nor conjoined are they of sufficient area to constitute an economically workable mining proposition. The reason why this is so is that the gold-bearing bodies of reef lie at a depth which necessitates a considerably augmented mining area in order to compensate for the large expenditure of capital which will be involved in shaft-sinking and equipment.

Until last year, the Gold Law did not give facilities for the necessary augmentation of area, but the passing of the Mining Leases Amendment Act last year has ameliorated the legal conditions in that respect.

The passing of that Act having provided the requisite improvement in the mining conditions applicable to our case, the directors of the Cassel and Clydesdale Companies set to work, and their labours resulted in the provisional agreement which is now before you. The agreement has already been approved by the Clydesdale Company, and your Board is asking you to ratify it to-day.

Provisions of the Agreement.

The main provisions of the agreement are as follows:—A new company will be formed called the Cassel Clydesdale (Springs) Gold Mines, Limited. That company will purchase the amalgamated block of 1,270 acres of Daggafontein from the Cassel and Clydesdale Companies for the price of £200,000, payable in fully paid up £1 shares of the new company. The £200,000 shares will be divided equally between the Cassel and Clydesdale Companies. That is to say, they will each receive £100,000 shares. At the outset the Cassel and Clydesdale companies will each subscribe £50,000 shares in the new company, payable as to 2s. per share on application, and the balance as and when required, but not more than 4s. per share per annum for a period of two years dating from the registration of the new company. The board of the new company will create a further 150,000 shares of £1 each, and these shares will be offered at par in equal proportions to the shareholders of the Cassel and Clydesdale Companies payable in full on application. During a period of twelve months after expiry of the term of the offer of the above 150,000 shares, the board of the new company will create a further 150,000 shares of £1 each. All who have subscribed to the first issue of £150,000 will have the option to subscribe at par for an equal number of shares in the second issue.

Issues Guaranteed.

Sir Abe Bailey, Bart., acting for himself and co-principals, has guaranteed the subscription of both of these two issues of £150,000 each or £300,000 in all. In consideration of this guarantee the guarantors receive the following options to subscribe for shares in the new company. For a period of five years from the registration of the new company at par, £500,000; for a period of seven years from the registration of the new company at 22s. 6d. per share, £500,000.

The guarantors will grant to the Cassel and Clydesdale Companies each a 5 per cent. participation in the above two options of £500,000 each. So that, when the above issues are completed the final capital of the new company will be £1,600,000, of which the vendors receive £200,000, leaving a balance of £1,400,000, which will provide cash for working capital. £1,462,500.

There are certain details relating to composition of the directorate of the new company with which I need not trouble you, the principle observed being equality of representation to

both the Cassel and Clydesdale Companies. I may remark that there is a reservation on the part of the guarantors to the effect that their guarantee and the options over the two £500,000 issues do not become operative until we have obtained from the Government an area of ground adjacent to the properties we sell to the new company sufficient to constitute a workable mining proposition. As you will remember, the new law of last year was enacted for the express purpose of meeting such cases as ours, and we are quite hopeful—particularly in view of the large sum of money the scheme now before you provides for the opening up and development of a mining proposition such as we contemplate—that a suitable scheme can be fixed between all parties concerned, which will be to the advantage of all. The opening of new Far East Rand Mines on the broad and well financed lines we propose benefits the Government and the whole community both directly and indirectly. That, I think, elucidates all the points upon which I need touch in reference to the proposals before you. The project is one to which your directors have given much time, thought, and hard work, and they confidently recommend you to accept it without a dissentient voice. The chairman then proposed a formal resolution of confirmation of the agreement.

Mr. Julius Jeppe, in seconding, said the agreement was refreshing in its simplicity and straightforwardness. If they succeeded, and it seemed to him quite improbable that they would not succeed in getting the required additional ground from the Government on fair and equitable terms, then undoubtedly they had a very promising venture. If, on the other hand, they unfortunately failed, then very little damage was done and the loss in cash to the company would be infinitesimal and they would still retain a very valuable asset in the ground they held, but it was inconceivable that they would not be successful in their negotiations for the acquisition of the ground.

The chairman, in reply to a shareholder, said they had to satisfy the Minister of Mines and the Government Mining Engineer as to what was a workable proposition.

The resolution was carried unanimously.

There were represented at the meeting 90,689 shares out of the issued capital of £200,000, and among the shareholders present were Messrs. L. Edwards, W. Ross, Julius Jeppe, A. Mackie Niven, J. Barlow, Pascoe, Lamb, D. R. Christie, W. J. Gau, E. M. Hind, J. Blacklock, and the secretary, T. L. Day.

The Minister for Pensions, in the Home Cabinet, in the course of a statement on the great im-

Diamond Cutting. portance of the diamond cutting industry for disabled soldiers, points out, that two factories are at present in full swing, where 500 men have been fully trained in diamond cutting and polishing. It is anticipated that by the end of the year two larger factories, capable of accommodating an additional 500, will be completed at Brighton. Another centre has been opened at Cambridge, while factories at Wrexham and Fort William are being erected. Mr. Bernard Oppenheimer is the prime

mover in the factories at Brighton, as has been previously recorded.

* * * * *
 Reuter at Melbourne telegraphs on February 4 that Mr. Watt, Acting Prime Minister of the Commonwealth, said the Government were considering the question of encouraging gold prospecting. He was prepared to permit, as an experiment, the export of gold for a period of three months to test the outside markets, although banks would not be permitted to export gold.

Australian Gold Export Experiment.

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Notes and News.

We understand that Mr. A. J. Brett, of the Crown Mines, has accepted an appointment with the Transvaal Chamber of Mines. Mr. A. J. Walton has been appointed his successor. Mr. D. Wilkinson, of the Chamber of Mines, sails for England at an early date.

His many friends on the Rand heard this week with regret that Mr. W. J. Sharwood, formerly Assistant Manager of the General Mining and Finance Corporation in Johannesburg, had died in London. The late Mr. Sharwood was vice-president of the Transvaal Chamber of Mines in 1906, and took a prominent part in Rand affairs during the years of his connection with the General Mining. Lately Mr. Sharwood had occupied a responsible position with Messrs. Lever Bros.

A full report will be found in this issue of the annual meeting of the Association of Mine Managers. Mr. Bulman's valedictory address provides an exhaustive review of the many matters dealt with by the Association during a difficult year; and Mr. J. J. Wessels, the new President, believes that the difficulties of the present year will be no less great. The President of the Chamber of Mines put the matter in a nutshell by declaring that now that the war had made the world safe for Democracy, the question was to make Democracy safe for the world, and apparently this consummation can be achieved only by saving Democracy from its friends—the extremists.

The floating of the nitrate and potash deposits of the Preiska district is heralded by the appearance of a prospectus of a corporation with a large capital, which is to be registered in the Free State. The public will be invited to subscribe the working capital, and very favourable reports have been received regarding the prospects of the venture. We hope to review the prospectus in our next issue.

It is believed in the district that the Nigel Mine may some day be reopened. All the stores were, of course disposed of when the mine closed down, but the reduction plant is, otherwise, intact. There are reported to be something like 300 claims still intact in the mine, but much of the remaining ground lies at a very considerable distance from the main shafts and milling plant, and the working costs on this section would be high. It is suggested that amalgamation with an adjacent mine would tend to increase facilities for the economic working of the ore remaining in the mine. The Nigel suspended milling operations at the end of 1917, and at that date the payable ore reserves were estimated at 51,000 tons.

At the further adjourned meeting of shareholders of the Witwatersrand Deep, Ltd., held at the Corner House, Johannesburg, last Monday, the result of the poll was declared whereby the control of the company passes from the Central Mining-Rand Mines Group to a board of directors elected by the meeting, namely: Messrs. Catesby Holland, H. Gamble, W. Bleloch, A. E. O'Flaherty, J. McAlister, J. A. Ellis, E. Diebel, and Rosenzweig. The report of the scrutineers was that 96,767 votes were polled for the resolution to remove Messrs. Holland and Gamble from the board and 122,953 against. The motion to entrust the Central Mining-Rand Mines Group with the technical and secretarial administration of the company was defeated by 122,953 votes to 96,767, and the final motion put forward by the Shareholders' Protection Society that all directors with the exception of Messrs. Holland and Gamble should be removed from office and six others elected, was carried by 122,953 votes to 96,767. Questions regarding the validity of proxies remain to be legally decided.

We understand that some very good results are being obtained by working the Black Reef formation on the farm Witpoort of the South-East Rand. Values of as much as 80 ozs. to the ton are said to have been located in the footwall section, and assays for the whole Reef body are high.

Black Reef on Witpoort.

We greatly regret that in the list of South African Collieries published in our last issue, we omitted the names of the Cassel and Clydesdale Collieries, two of the leading coal mines of the country. Omission of these names from the list is comparable to a rendering of Hamlet with the Prince of Denmark left out, and we hasten to correct the error.

The February issue of *The Reef* constitutes a record in so far as size is concerned for this popular magazine for mine workers. The contents, too, are informative, amusing and interesting. Amongst the subjects dealt with are: "The Mines and the War," "A Chat on Accidents," "The Work of the Association of Mine Managers," and "The Position of Apprentices." There are also social notes from the various mines, a complete record of inter-mine sporting competitions in February and fixtures for March, women's notes, poems and pictures, and a humorous mine story. The production is from every point of view a creditable one, and it cannot fail to interest and instruct mine workers.

We are in receipt of the February number of the *S.A. Engineer and Electrical Review*, our enterprising contemporary that specialises in general engineering and electrical matters. The present issue completes the first year of the paper's existence, during which it has grown into a very useful and valuable adjunct to the great trades and professions which it serves. The paper covers the whole field of engineering activity in South Africa, giving special prominence to railway, municipal, and electrical affairs, and appears to have established itself firmly in its own special sphere.

In our next issue we shall begin to publish a series of articles on the subject of reclaiming the lost Lakes in the Kalahari, written specially for this journal by Professor E. W. Schwarz, of Rhodes University College, Grahamstown. These articles will be accompanied by a map and will be illustrated. The Professor has only recently returned from another visit to Ovamboland, where he has been engaged investigating certain points for his scheme for bringing back into South Africa the waters that are now pouring out of it into the sea. It is generally admitted, by those most competent to judge, that Professor Schwarz's scheme, although a gigantic one, is not only feasible but necessary, particularly so far as the western part of it is concerned. Ovamboland, by the diversion of its rivers, is drying up, and this great feeder of the rains that fall on the Highlands of Angola, whence issue the Cunene, Okovango, Zambesi, and many of the head streams of the Congo, is becoming a sandy waste. Professor Schwarz will illustrate by his scheme how necessary it is to refill the lost Lakes and the benefits to be derived by carrying out his suggestions. A great many members of Parliament including Mr. Burton, the Minister for Railways and Harbours, Senator Fuller, and others are endeavouring to keep the matter alive. Whilst in England we have men like Lord Sydenham, Lord Selborne, Lord Milner, and Sir Harry Johnston, K.C.M.G., all keenly interested, and several of the greatest engineering firms of Great Britain, including Sir John Jackson, have been making enquiries as to the progress of the scheme. When accomplished, and we trust that it will be accomplished, South Africa will have done something tangible towards solving the difficult problem of the unemployed. This great engineering project will be the

means of putting millions of acres under cultivation, giving employment to thousands of whites and blacks, and where to-day we have hot winds blowing over hundreds of square miles of hot sands, we shall probably have cooler breezes from the waters of the lakes. Professor Schwarz's articles will in no way touch political matters. They will be simple descriptions of the country, the weir sites and the waterways he proposes to cut. The map is drawn from his actual personal observations, and will include new discoveries that he has made on his recent trip. Each article will be illustrated by photographs, which should prove most useful to engineers and engineering contractors.

An accident, which unfortunately was attended by considerable loss of life, occurred at this property on Tuesday last. It appears that an air-main explosion occurred there, the effects of which were felt on the surface, in the shaft and between 200 and 300 feet underground. Rescue parties were quickly at work, and it was found that four natives had been killed, and that about thirty other natives had been injured to a more or less serious extent. Considerable damage has been done to the compressed air column, and, of course, the shaft will be closed down for a while. The usual Departmental enquiry will be held, when a more definite explanation will be forthcoming as to the accident, and the circumstances which led up to it. Since writing the above we have learned that the death roll of the natives has increased to seven, and that 35 "boys" have been injured.

Sir Robert Kotze, Government Mining Engineer, writes: "With reference to your note of the 11th February, I have perused the excellent series of articles on Rand Gold and Peace Problems with very great interest. Whether the writer is right or wrong in his conclusions as to the effects of a curtailment of gold output on the world's affairs, I do not feel myself competent to express any opinion. It seems to me, however, that he puts forward a strong case, which merits the most careful attention from everyone interested in this question. His main line of argument strongly supports our general contention that the production of gold should be stimulated by the great nations and in particular, by Great Britain, and if his contentions are correct, the beneficial results that would flow from such stimulation are out of all proportion enormous in comparison to the outlay required." Sir Robert Kotze's admirable summary puts the whole thing in a nutshell. His view, we are glad to note, is gradually gaining ground in influential quarters in England, despite the colourless and disappointing reports of the British and American Government Committees on the subject.

The *Times* recently contained a useful review of the "Shorter Hours" agitation that is now spreading throughout most industries of Great Britain. It is written by our contemporary's Labour Correspondent, and concludes thus:—"The question of hours, of course, is bound up with the thorny question of wages and trade union 'safeguards,' and both of these questions have a vital bearing on the possibility of securing that enlarged output which, according to accepted theory, is the key to industrial prosperity. Already, in the engineering and shipbuilding industries, the reduction of the working week from 54 hours to 47, without interference with the wages of men paid at a weekly time rate, has created dissatisfaction among the men in those branches of the trade where piece-rates are paid, and they are calling for the adjustment of their rates to counter-balance the decrease in hours. This problem, and the kindred question of the restoration of trade union conditions, are too large to be discussed here, but, in the case of the trades which have to face foreign competition, though not to the same degree in the other cases, they are inseparable from the question of hours, and should therefore be tackled concurrently. The spirit in which they are faced by all parties, and the speed and smoothness with which they are solved, will have an important, if not a governing, influence on the industrial outlook of the coming months."

TOPICS OF THE WEEK.

THE COAL OUTLOOK.

SEVERAL factors have combined of late to draw attention to the South African coal-mining industry. It is an open secret that but for the conciliatory spirit shown by the Colliery Section of the Chamber of Mines, culminating in the concession of most of the men's demands, a rupture in the good relations between the coal mining companies and their white employees might have occurred this week. Fortunately an amicable and a permanent settlement seems to have been reached, and the white employees of the coal mines are to be congratulated on the position they have now won. As the cables showed during the week, the relations between coal owners and men in South Wales appear to be on the eve of another serious upset, and the solemn warning uttered by Mr. Lloyd George in the House of Commons has a peculiar interest for the coal mining industry in this country. Should the British Prime Minister's advice be disregarded, the miners of South Wales, by their foolish, unpatriotic and precipitate action, may throw the coal trade of Brazil and the Argentine into the hands of the North American exporter and, in a measure, into the hands of the South African exporter. Thus, the misfortunes of the Mother Country, however much we should all regret them, might prove an effective stimulus to the coal export trade of South Africa. The Argentine, as the report of the Union Government Commissioner showed, offers an enormous field for the development of the South African coal market, and though the prejudice against the South African article is known to be a real handicap, it could not long survive the necessities of the case in the event of a strike in South Wales. Hitherto, of course, the absence of shipping facilities has prevented the growth of a coal trade between this country and the Argentine. The wonderful possibilities of expansion possessed by the South African coal trade generally have been explained in a series of articles appearing in our columns; and though doubtless open to the criticism that they contain little that is new and that they stick close to safe generalities, they have, nevertheless, we submit, served a useful purpose in attracting attention to an often overlooked industry, big with promise for the future of this country. Quite early in any examination of the possibilities of the coal export trade one is brought up against two outstanding factors in the situation. The first is the belief in the inferiority of our product compared with that of South Wales. This factor has hitherto militated—unduly, we think—against the entry of South African coal into overseas markets. Still, it is an elementary economic fact that where long distances have to be negotiated at high rates, the cost of transport being constant, it pays to carry a high quality, high priced article in preference to a cheap, low-grade article, and fuels are no exception to this rule. Plainly, therefore, the South Wales product, by reason of its superior quality, enjoyed a good start in the competition for most overseas markets. The price factor, of course, conditioned each case, but it has taken the war and the dislocation of the British coal export trade to offer the South African article its first real opportunity to capture a material portion of the overseas field. In this connection, the fact that the Transvaal coal-owners did not seek to profit by war conditions to increase to any extent prices of coal for the bunker and export trade must be credited to them as both good business and real patriotism. Had they so increased prices, the real sufferers would undoubtedly have been the unfortunate British taxpayer through the British Admiralty, who were, of course, the biggest customers in the South African market. The Transvaal Coalowners rejected the temptation to profiteer, trusting to be repaid by the excellent advertisement afforded to their product by its extensive use in Admiralty vessels. On similar grounds the fact that the Sudan Railways have been supplied with our coal at low rates during war time will doubtless justify itself in time on the strictest business grounds. Owing to the fixed contract prices, no increase in the cost of the coal supplied to the railways,

power companies, or gold mines was, of course, possible during the war. The second great factor which our coal trade has to contend against is the attitude and policy of the South African Railways. The Railway Board, we believe, readily admits that the coal industry has a serious grievance against the S.A.R., and its only excuse is the familiar plea that "we must have revenue." As a fact, the coal trade is a milch cow of the whole railway system of the country, and as such is only second in long-suffering productivity to the Rand gold mining industry. The spokesmen of the Transvaal coalowners are, we believe, constantly urging the Government to treat the industry more sympathetically in the interests of both the coal mines and the country, and only the other day a deputation representing Transvaal coal interests visited Capetown and laid before the Railway Board their manifold grievances. The unfairness and the folly, for instance, were pointed out of the frequent changes in rates that made it impossible for the shipping people to reckon on any continuity in prices. Naturally fluctuations arising from the ever-increasing demands of the railway people are dead against the building up of an export trade. It is understood that the railway people have now at last been brought to admit this. Apart from the export trade, there is the important question of a by-product industry. In this matter it is contended that the coal mines have not been well advised. A central co-operative scheme of treating waste coal, or of manufacturing by-products from the most suitable classes of coal, waste or otherwise, has much to be said for it, but the action taken by individual mines in the direction of erecting their own by-product recovery plants is regarded as putting a co-operative scheme out of court. There is, of course, much to be said for and against the latter suggestion, and we hope that before our articles on the subject of coal are completed we may have the benefit of some of our readers' views. Meanwhile, we commend those articles to all interested in the industrial future of the country.

An Imperial Treasury statement issued through the Press Bureau in London says it is impossible to dispense altogether with the control of capital issues at present, but it is necessary to reconsider the principles governing the sanction of such issues and avoid placing unnecessary obstacles in the way of providing capital for the speedy restoration of commerce and industry. In view, however, of a number of fresh issues being expected, a new regulation has been made under the Defence of the Realm Act prohibiting issues except under licence from the Treasury, and the Capital Issues Committee has been reconstituted with new terms of reference.

* * * *

Our London contemporary, the *Mining World*, says: "Sir E. A. Wallers, President of the Transvaal Chamber of Mines, recently delivered a speech at a Johannesburg meeting, in which he claimed financial support for the gold industry, basing this on the allegation that practically every other industry had received assistance from this quarter except that of mining. He pointed out that even the Bank of England had made an extra profit in 1917 of over £1,000,000, and, he might have added, that the producer is obliged to sell gold to the Bank at a less price than he could obtain for it elsewhere. This statement is said to have caused 'some amusement' in the City. If it did, we only envy the ease with which the City can be amused. Gold production is declining, in consequence of the operation against it of well-known factors, and because Sir E. A. Wallers, who probably knows more about the subject than most living men, points out an anomaly, and suggests a remedy, 'some amusement' is caused in the City. The matter is, however, not one for amusement, but for serious consideration, as Sir E. A. Wallers pointed out."

THE GREATER HEIDELBERG GOLDFIELDS.—I.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

The Bridging of the Springs-Heidelberg Gulf—A Battlefield of Geologists—Correlative Stratigraphy and Its Limitations—Mr. Bleloch's Theories and Work—Extensive Prospecting in Progress—The Investigations of Dr. Rogers—Wanted a Core Museum—Is a New and Vast Extension of the Goldfields To Be Proved?

AFTER a lapse of several years the Heidelberg district is again in favour. Since the collapse of the famous Coronation Syndicate and its satellites, the south-eastern outliers of the Witwatersrand gold fields have lain dormant, and although there have been sporadic outbursts of activity the Heidelberg areas and the districts lying to the south-east thereof have been engaging the attention of the harrow rather than the pick until quite recently. There have, however, been certain events which have conspired to re-awaken interest in this locality. In the first place the trend of development of the Farther East Rand gold fields has been eastwards and south-eastwards from Springs. Latterly the trend has been more southerly than ever, as witness the purchase of the Lace Proprietary Mines farm Spaarwater by the House of Barnato and the acquisition of a substantial interest in the Southern Van Ryn by the Consolidated Gold Fields of South Africa. Despite the closing down of the old Nigel mine the Nigel district has engaged more sound and substantial notice during the past few years than it did for the previous twenty.

THE NIGEL.

In the early 'nineties the Nigel field attracted a considerable amount of public attention on account of the rich finds of the Nigel Gold Mining Company, which was securing from a small obsolete form of mill a yield of gold exceeding £7 to the ton milled. The Nigel area (as it is called) is situated about twenty miles south-east of Johannesburg, and approximately nine miles north-east of the township of Heidelberg. The culmination of excitement in the district would appear to have been about the time of the over-speculation of 1895, when there were approximately a score of different companies with areas parcelled out adjoining or near the Nigel Mine proper. The Nigel Gold Mining Company proper went fast and furiously to work upon its thin reef, which has undoubtedly indicated that there are considerable patches of very rich gold deposits. To this day there is considerable controversy as to the trend of the reef in the field, but its existence in the Nigel Company's and Sub Nigel Company's ground has been proved beyond question. Dr. Hatch's famous declaration that Nigel and Main Reef series were identical constituted a landmark in the geology of the field and the excellent showings of the Sub Nigel invested the Nigel area with added glamour.

THE ADVANCE OF THE FAR EAST RAND.

But what has principally tended to re-affirm interest in the Heidelberg region and to dispel some of the clouds of despondency which banked up so heavily in the district after the pricking of the Coronation bubble has been the extension of the great auriferous zone to the east and south-east of the New Modderfontein Gold Mine.

In the Chamber of Mines' returns the Heidelberg district is still kept as a locality distinct from the Witwatersrand, an industrial entity which apparently should not be confused with the field which to-day extends from Randfontein to Springs and beyond. Nevertheless the break in the chain of mining industry is gradually being eliminated.

The purchase of Spaarwater by the Barnatos and the active participation of the Consolidated Gold Fields in the Southern Van Ryn property seem to indicate that the gulf which has hitherto divided the so-called Witwatersrand proper from the Heidelberg-Nigel areas is being bridged. There are, moreover, those who believe that the development will not cease at this point but that money and industry will sweep onwards past the township of Balfour and beyond, embracing that subsidiary sincline which contains Rietfontein, Wilgepoort, Malanskraal, Tweefontein and Daspoort, until Greylingstad and Hex River—names which had a more pleasing sound a few years ago than they have recently enjoyed—are brought within the cosmos of our expanding Rand. This may seem a far-fetched flight of fancy. It is no more at present than a somewhat vague hope, and there must be many who will point to the failures of past years, the many thousands spent in claim licences, the huge sums of money sunk in diamond drills which drew blanks or else disclosed some geological problem which did not satisfy the stratigraphical requirements of the



DIAMOND DRILLING ON EENDRACHT No. 267, NEAR HEIDELBERG.

savants, the trenches and shafts which passed so quickly from values into dykes or barren reef, and all the money that has been lost in inflated shares and fashionable markets. Looking back over these things, we readily appreciate the fact that much may be said, and be said with justification, against the south-eastern annexe of the relatively non-problematical Rand.

HOW TIMES AND THOUGHT HAVE CHANGED.

But it is at the same time only right to point out that not so many years ago the New Modder was supposed to be the *ultima thule* of the Rand proper and that those who sought fortune from the fickle beds which lay beyond were tempting the Great Providence of the gold mines. Not so many years ago a contributor to this paper wrote some

remarkably interesting and prophetic articles on the Witwatersrand annexe. He painted his picture of the future prosperity of the Government Areas, the Modder Deep, Springs and Brakpan in such glowing colours that many thought his vision was at fault. But time has swept away the mists of confused and over-cautious thought and the fog of prejudice, and though Reef nomenclature has changed since then and new theorists have come into the field of controversy it is to-day an indisputable fact that Springs Mines and the adjacent Daggafontein property are no longer considered to be within the realms of problems and that only a few miles lie between them and the Nigel Reefs. The development of the Far East Rand during the past ten or eleven years has been truly remarkable.

THE CENTRAL RAND'S DECLINE.

And whilst the outputs and dividends of the Further East Rand have been rising, developments have been improving, and Government leases have been converted into vast mines highly profitable both to State and shareholders, the Central section has been declining in gold winning achievement. The mines of the Krugersdorp, Johannesburg, Germiston and Boksburg districts have passed the zenith of their prosperity. They have proved themselves to be amongst the richest store houses of wealth that the world has ever known. They have made history and changed politics, provoked wars and given employment to many thousands of people for a third of a century, whilst their reflected glory shines in the seats of the many mighty who made fortunes and history through their early associations with the auriferous bankets. These mines are not exhausted, but their heyday of prosperity is over and there are few who are optimistic enough to believe that in a dozen years' time there will be thousands of stamps running between Randfontein and Boksburg. It is not, therefore, surprising that men and money should look elsewhere for fortune and the future. We see the great eastern annexe extending year by year beyond the zone of problems into the realms of reality. We see dividends increasing and developments extending, and so there is nothing strange in the endeavour to probe into the complex and controversial problems further afield and to try and wrest from nature the secrets of a further vast storehouse of wealth of the existence of which there is strong presumptive evidence.

THE BATTLEGROUND OF EXPERTS.

And here one comes into the field of long-standing and acute controversy. Eminent men stand guardians over various geological opinions. Some have deserted their theses for the forces of modern fact and industry are against them. Others would re-write the whole stratigraphy of the Rand, and some again turn to old suppositions and endeavour to demonstrate that they were discarded without fit or proper trial. The whole *casus belli* of the several geological campaigns is based on nomenclature. The belt of thirty miles which lies between Roodepoort and Boksburg has produced more gold than any area of like size on earth. In time the Far East Rand may eclipse the achievements which made Johannesburg one of the chief cities of the Southern Hemisphere. For the present, however, we will admit that between the two big faults which disturb the ordered sequence of Central Rand geology—the Witpoortje break on the west and the Boksburg break on the east—the mills have been grinding out gold in such quantities for the past third of a century that the very name of Main Reef series has sufficed to draw investors as with a magnet and to at once suggest a picture of prosperity astounding. Small wonder then that the very words "Main Reef series" have become a fetish and that so many propositions have sought to identify their reefs with Main Reef series, not only to justify flotation but to support the shares up to a substantial premium in the market.

The question of demonstrating the payability of the gold contents has too often been postponed in favour of endeavours to correlate banket exposures with reef sections on the Central Witwatersrand. To obtain a reef section that dovetails in all its stratigraphical niceties with an

exposure across, say, Ferreira's township is certainly a prospecting triumph; and to have the identity of the two sections hall-marked by an eminent geologist has always been deemed a big initial step on the road to prosperity. When Mr. John Harry Johns announced that the Coronation Syndicate had secured several miles of Main Reef series on the Edenkop-Rietfontein-Rietbult line the shares of that syndicate jumped to nearly three thousand pounds, and a host of flotations sought to locate extensions of the Coronation Reefs. But when on September 1st, 1904, the late Dr. Corstorphine reported unfavourably on the property and stated that in his opinion the Coronation Reef was not on the Main Reef horizon and that its extension was not to be expected, Coronations and all the dependent propositions collapsed like a house of cards. Since then other geologists have given much attention to the Heidelberg district. Drs. Hatch, Corstorphine, Carrick, Mellor and Henderson have lent their talents to the problem. This Wotenagamot of Geology has not arrived at finality nor entire conformity of views and interpretations. It is doubtful if such things will ever be reached. But the geologists have shed much informative light on many problems which have hitherto lain under the darkness of overburden or the shroud of diabase. We may expect further important pronouncements in the near future. Dr. Rogers, of the Geological Survey, has been investigating the district in question for the past year, and we may expect much from him. We understand that he has by no means completed his labours and that he is likely to make Heidelberg his headquarters for some time to come. No doubt much fresh data has been accumulated and in view of the interests at stake most careful consideration of the various correlative factors is necessary so that although there may be disappointment at delay in the publication of Dr. Rogers' investigations it must be appreciated that a competent treatise on Far South-Eastern Rand geology cannot be gained by hurrying.

MR. BLELOCH'S THESIS.

For the moment the theories put forward by Mr. Wm. Bleloch claim principal attention, for it is with a view to demonstrating the economic truth of these beliefs that a large proportion of the work that is now in progress in the Heidelberg district has been commenced. Briefly stated, Mr. Bleloch's thesis is that the auriferous bankets commonly known as the Main Reef series which are worked in the Central Rand and which may be followed with little interruption or displacement in a relatively ordered and consistent sequence from Roodepoort to Boksburg, are distinct from the reefs lying to the west of the Witpoortje break and from the reefs lying to the east of the Boksburg line of faulting. These latter reefs, or at any rate those portions of them which are profitably worked, he identifies under the head of the Van Ryn series. In other words, Mr. Bleloch correlates the series worked at Randfontein, the old so-called West Battery and Botha series and the reefs worked in the French Rand, with the conglomerate beds which have been turned to such profitable account during recent years by the New Modderfontein, Government Areas, Springs and other Far East Rand propositions. These he regards as one and the same series, namely, the Van Ryn, and he does not confuse them with the Main Reef series of the Central Rand proper or with the Nigel Reef, each of which he regards as a distinct and separate geological development. The Nigel is assigned to a horizon considerably below that occupied by the highly profitable and consistent Van Ryn series, i.e., it underlies it and it therefore follows that Mr. Bleloch's contention assumes the existence of two payable reef series in the area which falls within the scope of this article—the top or Van Ryn section, and the bottom or Nigel section. Mr. Bleloch contends that these two reef series have a very persistent development on the Further East Rand, that they sweep southwards through the Southern Van Ryn and Sub Nigel properties and the Heidelberg town lands, and are to be found in the Malan's Kraal - Rietfontein - Tweefontein - Wilgepoort - Daspoort syncline to the south of the old Coronation line of development and in proximity to the township of Balfour and the Natal railway line.

In Mr. Bleloch's estimate the reef encountered in one of the boreholes at Daggafontein Gold Mine at a depth of 1,946 ft., assaying 31 dwts., was in the Van Ryn horizon, and that a continuation of this borehole cut the Nigel series. Mr. Bleloch supports his reading of the stratigraphy of the Further East Rand section by a weighty mass of correlative petrology and stratigraphy. In subsequent articles of this series we shall examine the evidence adduced by him in greater detail and also the combatant theories advanced by others who hold to different views. For it is hardly necessary to state that the Bleloch thesis has opponents. Mr. Moffat, for instance, is endeavouring to prove another line, and the development policies of the Consolidated Mines Selection Company at Daggafontein and of the Consolidated Gold Fields on the Sub Nigel and Southern Van Ryn suggest that the technical experts of these and other flourishing Far East Rand mines do not see eye to eye with Mr. Bleloch. Never yet has complete agreement been reached in regard to Rand stratigraphy, and time alone, the pick, the hammer, the shovel, the drill, and the assay plant, or better still the stamp battery and the cyanide tank are going to prove who is right and who is wrong in the economic sense. And that, of course, is what really matters.

THE LIMITATIONS OF CORRELATIVE GEOLOGY.

Correlative geology has its value but also its limitations. As the late Dr. Corstorphine wrote in his Coronation report in 1904, "The value of a Main Reef correlation lies simply in the fact that it is some warranty for believing in the continuity of the deposit but the continuity is more valuable than the correlation, and if it be proven the latter is of little consequence." Mr. Bleloch and the companies associated with him cannot, however, be accused of being mere academic dreamers. A representative of this journal has, during the past week, visited a goodly portion of the Heidelberg district and has other visits in contemplation. He has found diamond drilling, trenching, shaft sinking, and other prospecting operations in progress, not only in the immediate vicinity of Heidelberg (on the town lands and on the farms Eendracht, adjoining Spaarwater, Tulepvale and Boschfontein) but also on the Malanskraal-Tweefontein line. Already a very considerable amount of valuable work has been achieved and within the next few months further exposures of reef should help in large measure to answer the economic portion of the riddle even if the academic aspect remains a bone of contention. In succeeding articles we propose to examine in detail the facts and presumptions adduced by the rival universities of thought and action. We intend to preface this by attempting to portray in an ordered and intelligible sequence the history of what for lack of a better or more comprehensive name we may call the Greater Heidelberg Gold Fields, and to recapitulate past prospecting results under the aegis of various companies and the stratigraphical evidences afforded by diamond drill cores. The diamond drill is no certain open sesame to the buried storehouses of Nature. Too much importance has often been attached to its disclosures of reef widths and values in an exceedingly small and isolated core section. Nature has never been so uniform in her distribution of auriferous favours that one can deduce the value of a thousand claims from a mere core no more than a couple of inches in diameter. But diamond drills can throw valuable light on the horizons of strata and assist greatly in the framing of a definite scheme of development. Scores of boreholes have been sunk in the Greater Heidelberg gold fields, and it is a pity that attempts to co-ordinate disclosures have not been more whole-hearted. Many miles of instructive core have been obtained, and it is a matter for everlasting regret that these cores have not found eventual lodgment in some central dépôt where their disparities might be contrasted and their coincidences marked. A core museum would throw interesting light on the present position and perhaps save much expensive duplication of work. But such an institution does not exist and core data, like data relative to the disclosures in old trenches and shafts now full of water are scattered and unco-ordinated. This adds immensely to the difficulties of compiling a compre-

hensive and chronologically correct abstract of the history of the Heidelberg areas. We are fully aware of the obstacles and also of the pitfalls with which correlative geology is set. A solution pleasing to all interests can only be obtained by the proving of a gold field greater far in area and richness than anything the world has yet known. That perhaps is a consummation hardly to be hoped for, but it will not deter us from attempting in subsequent articles to give a more ordered abstract of the history of the Heidelberg fields than is now obtainable, and to record the results of an examination of present activities with special reference to geological controversies and the prospects of proving in an economic sense the extension of our gold fields.

(To be continued.)

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

- "W.I.C.B." (Capetown).—Thanks; the suggestion will be adopted.
- "W.G." (East London).—The coal mine in question is still in existence and producing.
- "Anxious."—All three very speculative; the last-named may perhaps benefit from Far East Rand activity.
- "W.K."—(1) Yes. (2) The list will appear next week.
- "Barbertonian."—The Rhodesian output is printed in full each month in our columns, as received.

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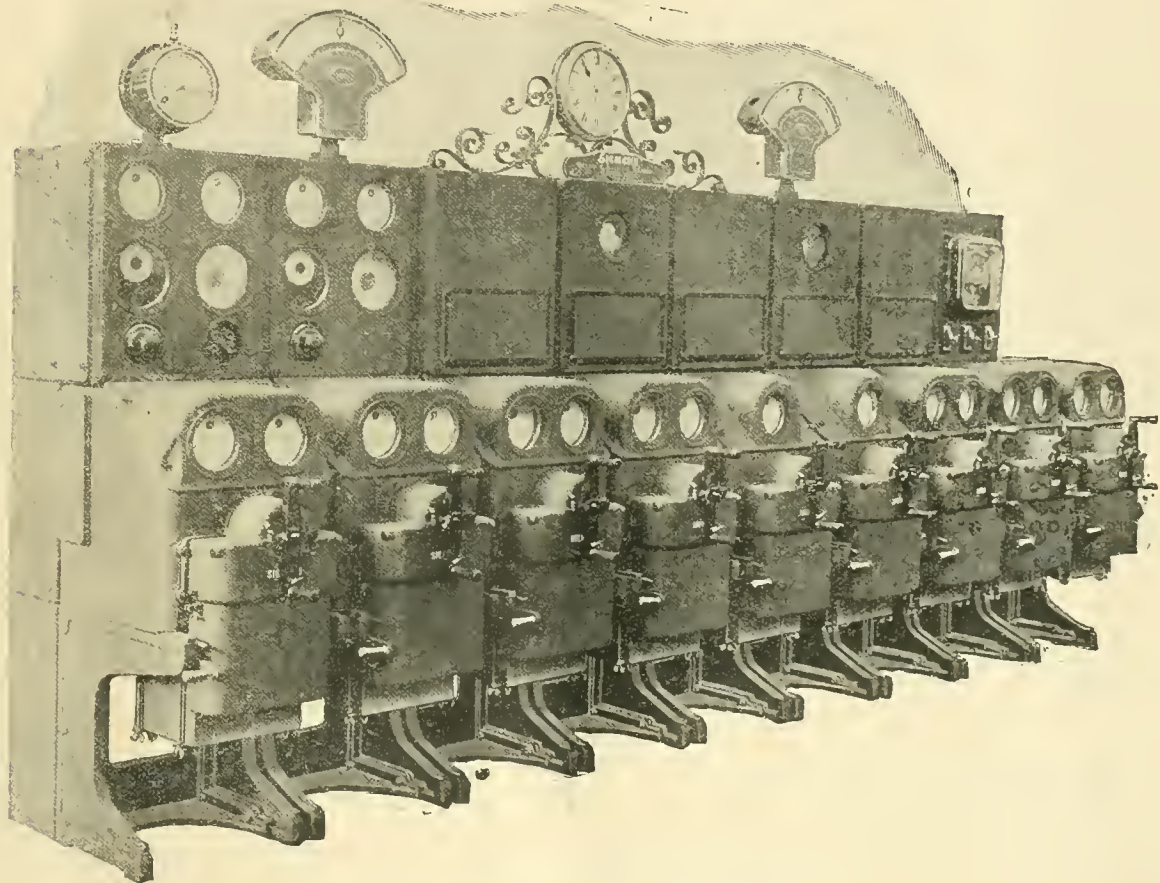
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SOUTH AFRICA AND KING COAL.—IV.

More About the By-Product Industry—What the Natal Ammonium Company Is Doing— The Evolution of the By-Product Coking Industry—Our Unrealised Millions—Experts on the Way to Hlobane—The Eastern Market.

THE question of producing by-products on a large scale in South Africa has to be considered in the light of local conditions and the industrial circumstances which may arise in consequence of the cessation of hostilities in Europe. The production of by-products from coals rich in nitrogen is a highly profitable industry, but it requires considerable capital, expert technical advice and supervision, and a careful study of markets to insure success.

THE OUTLOOK FOR COKE.

In so far as coke is concerned the market is limited. During the war the Cape Copper Company and the Tanganyika Concessions have been fairly large purchasers of Natal coke. Before the war, however, the Cape and Namaqualand Copper Companies obtained coke from Great Britain, the boats that took their copper shipments home bringing back coke on the return journey, and it may be that the copper companies will elect to purchase coke from England and Wales again in the near future. Similarly the position in regard to Katanga's future coke requirements from South Africa is not very clear, and the local market, apart from these concerns, is not a very wide one. It is confined to foundries and metallurgical and engineering works of no great size, and until we work up a really important iron and steel industry in this country the prospects are not in favour of a large or expanding market for coke.

A HIGHLY-PROFITABLE INDUSTRY.

The production of sulphate of ammonia, benzol, tar and light oils offers a most alluringly profitable field. The world's consumption of sulphate of ammonia is about a million and a half tons per annum. We understand that the Natal Ammonia Company, possessing at Mount M'Gwibi the only large and important by-product plant in South Africa are obtaining a revenue of three pounds for each ton of coal raised at their property through the manufacture of sulphate of ammonia. This, in the phraseology of the gold industry, represents a grade of fifteen pennyweights per ton, which is a measure of revenue which exceedingly few gold mines of the Rand can even approach. The Natal Ammonium Company's coal is high in nitrogen content, ranging from 1.89 to 2.226 per cent., and it is understood that the company is obtaining no less than £40 per ton for its product at the Coast. This is a high and war-inflated price, and the possibility of the large munition plants of Europe, now that peace appears to be within sight, turning attention to the manufacture of sulphate of ammonia on a large scale and introducing a very important competitive factor into the sulphate of ammonia market must not be overlooked. It is known, too, that Germany and Austria have accumulated large quantities of sulphate of ammonia from the by-products of their munition plants during the war, so that it is not to be expected that South Africa will be able to maintain the unrivalled position created by the war in regard to this highly-valuable fertiliser.

THE EASTERN MARKET.

Very little sulphate of ammonia is used in South Africa. The proper application of this fertiliser to soils requires experience and expert preparation of the ground. The market for the sulphate produced at Mount M'Gwibi has so far been with the East, particularly Mauritius, Ceylon, Java and Japan, where intensive cultivation is practised and the agriculturists have gained a sound knowledge of the application of this fertiliser. But in the course of time it is certain that sulphate of ammonia will be much more extensively utilised in South Africa, where the agricultural industry is going ahead by leaps and bounds. The present prices for sulphate of ammonia may be lowered, but for

certain markets the export price will assuredly admit of a profit even if the European and American productions are largely increased.

THE DEMAND FOR COALS WITH HIGH NITROGEN CONTENT.

One of the great problems of the age is how best to supply nitrogenous compounds for crops and for the revivifying of exhausted lands. The terrible devastation of war has laid waste vast areas in Europe, and it is certain that there will be a very great demand for European produced fertilisers in Europe itself. All the world over there is a constant demand for coal-bearing areas rich in nitrogen, and this question of the production and utilisation of by-products especially in South Africa requires the close attention of the Government, of capitalists, and of engineers, scientists and chemists.

OUR UNTOUCHED MILLIONS.

Both in the Transvaal and Natal, and in a lesser degree in the Orange Free State and the Cape Colony, there are immense tonnages of waste coal in the shape of "nuts," "peas," "dross" and "duff," which contain vast sums of money when translated in terms of by-products. It is estimated that 15 per cent. of the current production is at present dumped, and the valuable contents might have been recovered but must now be regarded as irretrievably lost. The accompanying photograph of the Hlobane Colliery's dump heap will give an idea of the immensity of the possibilities of the by-product trade at just one colliery of the country.

ERECTION OF PLANTS.

Hlobane coal carries about 2 per cent. of nitrogen, and it is the intention of the directors of that company to erect a by-product plant of suitable type, and for this purpose experts are now on their way out from Europe. The Dundee Coal Company also propose to erect a by-product plant of the Coppée type, the Tweefontein Collieries are installing a modified Mond equipment, and the Witbank Company are proceeding with the production of tar again. Tar and benzol are by-products for which there is a considerable local market. Benzol is coming into great favour for the operation of underground locomotives and tar is, of course, a constant requirement of municipalities. The great potentialities of the by-product industry in South Africa will be patent from the fact that a practical test has recently been made from a prominent Hlobane Colliery on a shipment of coal sent to England. The yield was 100 lbs. of sulphate of ammonia and 35 lbs. of tar per ton of coal treated.

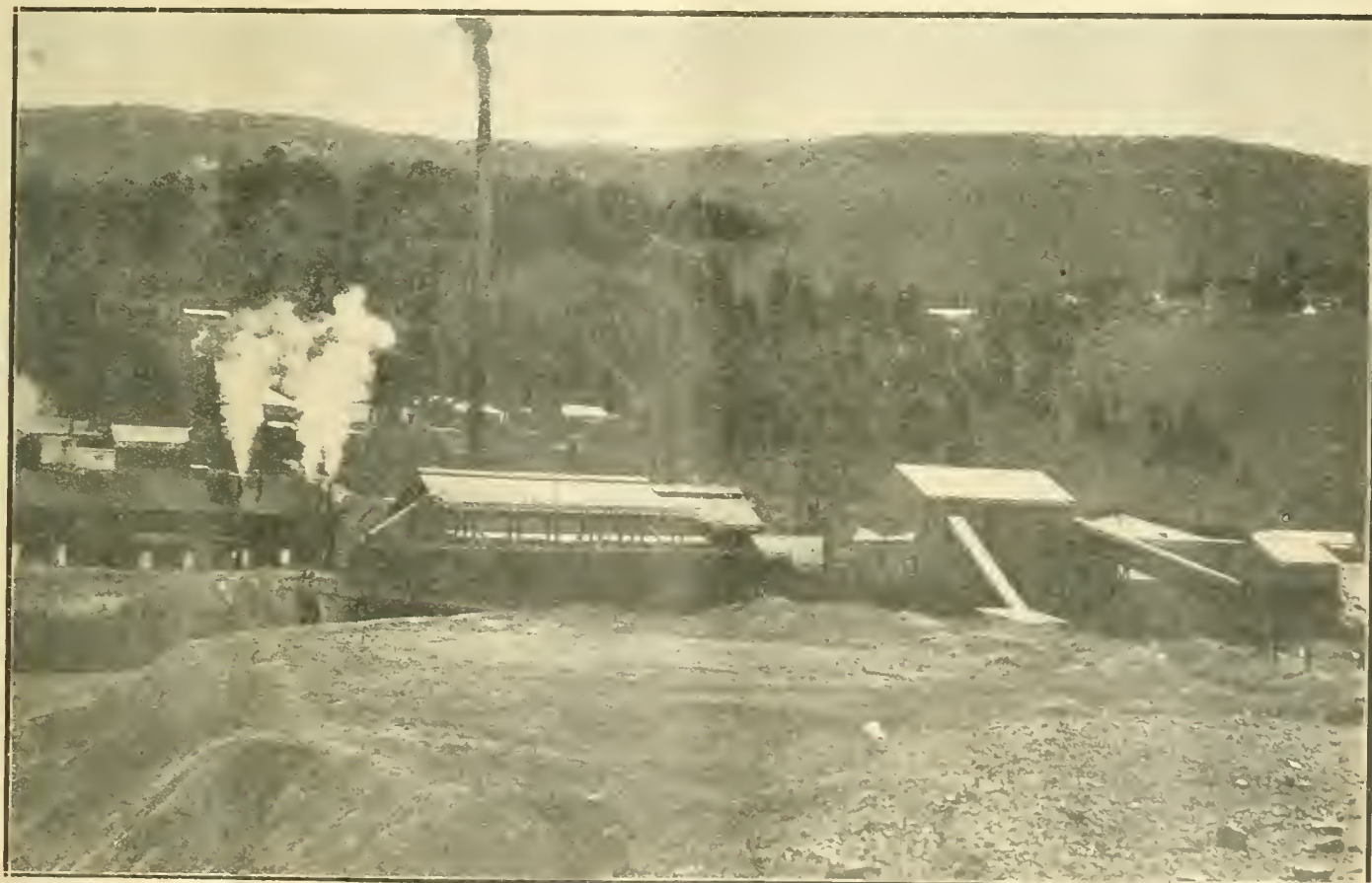
EVOLUTION OF THE INDUSTRY.

We are still in the initial state of coal industry development in this country and particularly so in so far as the by-product branch is concerned. We have to learn from the experience of long-established concerns in Europe where the by-product coking industry has arrived at its present state of development by a rational process of evolution and improvement from the primitive practice of the carbonization of coal in heaps. After this primitive method came the beehive oven; then certain forms of retort oven, with or without the beginnings of provision for recovering some portion of the volatile elements of the coal dealt with; and finally the stage of scientific carbonization represented by the retort coke oven of to-day, by means of which not only a satisfactory quality of coke is obtained in much less time than by former methods, but whereby also valuable by-products which form the basis of other important industries are recovered. Coke for metallurgical purposes is produced to-day in England both by the secondary and up-to-date methods. In the former the sole product is coke, except

VIEWS AT THE COAL MINES.



THE HLOBANE COLLIERY'S DUMP.
A HEAP OF UNREALISED FORTUNE



THE HLOBANE COLLIERY

that sometimes surplus heat is used for steam-raising, etc., whilst in the latter is obtained not only coke, but tar, ammonia, benzol, and coal gas. With the development of the manufacture of coal gas for town lighting, etc., necessitating the removal of the tar and ammonia from the gas in order to render it suitable for public use, attention was also directed to the possibility of recovering these products from the coal carbonized for the production of metallurgical coke, but the design of the coke ovens then in use did not lend itself to adaptation for by-product recovery.

The object of the destructive distillation—or, as it is generally termed, the carbonization—of coal in coke ovens is in Europe primarily to produce metallurgical coke, and this consideration is therefore the predominating factor influencing the selection of coal for coking purposes in England, but as already stated coke is not of primary importance in South Africa. In the early days of coke manufacture, coke being the only product, the quality of this was the one consideration to be borne in mind. With the development of the by-product oven, however, although coke is still undoubtedly a most important factor the by-products have continually increased in value, and have thus

been taken more and more into account in the selection of the coal. Consequently we now have to consider this aspect, and to aim for that system of carbonization and that quality of coal which will at one and the same time give a suitable yield and quality of coke and the maximum yield of by-products. In other words, we are to obtain the fullest possible amount of everything in a ton of coal.

A GREAT MARKET AWAITING CAPTURE.

In South Africa the future of the by-product trade is indissolubly wrapped up in the question of the development of a general coal export trade. Our internal market is relatively small, but our overseas market both for coal and its by-products can be developed to immense proportions, given rail and shipping facilities and adequate labour. Expansion of the export fuel trade will encourage the by-product industry. South Africa wants more rolling stock and better shipping facilities and less apathy on the part of the Government. Granted these the Union would without difficulty capture the great bulk of the coal trade of the Southern Hemisphere. Natal alone could, we are assured, without difficulty double her output given adequate railway facilities and labour.

Iron Ore in Madagascar.

There are several deposits of titaniferous iron ores in Madagascar. The one at Vosgoabe in the Betsiriry, according to the late M. Auchair, Controller of Mines, contains over 3,500,000 tons of ilmenite (titanium iron oxide), which could be readily mined. Certain samples have given as much as 40 per cent. of titanium dioxide, but the average iron ore will hardly contain more than 10 per cent. of TiO_2 . The ores could be dealt with in the electric furnace, and the necessary current could be easily obtained from the falls of the river Mahajilo, an affluent of the Tsiribihina.

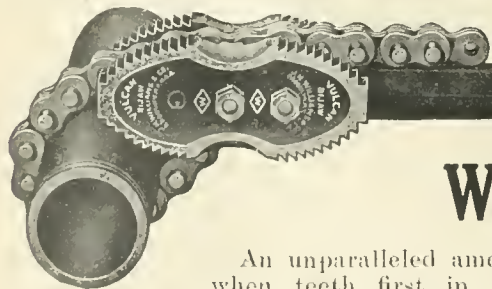
Charterland and General.

While the profit of the Charterland and General Exploration and Finance Company for the twelve months ended August 31 last was only £29,235, as compared with £43,475 in the previous period, shareholders do not suffer any reduction in dividend, for the final distribution brings the total up to 20 per cent. The shortfall in revenue of £44,200 is largely explained by the fact that in 1917 the Old Nic mine was producing gold; it is now exhausted, and the plant and machinery have been sold. Profits in South Africa a year ago included sale of asbestos and cattle, and these two items do not appear in the present accounts, the result being a drop of almost £20,000 in the total.

Industry and Science Advisory Board.

The recent session of the Advisory Board of Industry and Science terminated on the 17th ult. The combined Board as now constituted, includes the following:—Mr. C. G. Smith, chairman; Messrs. E. Chappell, C.B.E., and Bernard Price, deputy chairmen; Prof. J. C. Beatty, (Principal, University of Capetown), Mr. J. Burt-Davy, Dr.

W. A. Caldecott, Mr. L. Colquhoun, Sir Thos. Cullinan, Mr. A. J. Chiappini, Dr. J. D. F. Gilchrist (University of Capetown), Mr. W. R. Jackson, Mr. G. A. Kolbe, Mr. W. J. Laite, Prof. D. F. du T. Malherbe (Transvaal University College), Mr. F. T. Nicholson, Prof. J. Orr (S.A. School of Mines and Technology), Mr. J. Pyott, Prof. G. R. Stanley (S.A. School of Mines and Technology), Prof. B. de St. van der Riet (University of Stellenbosch), Prof. R. B. Young (S.A. School of Mines and Technology); Rhodesian representatives:—Sir Francis Newton, K.C.M.G., and Mr. C. B. Kingston (acting for Mr. J. G. McDonald). The only absentees were Dr. Malherbe and Mr. Kolbe. The Board thus represents science and industry from all parts of South Africa, and has dealt with a great variety of questions affecting development throughout the sub-continent. Among matters dealt with were the report of the Scientific Research Grant Board, dealing with the proposed conditions for research scholarships, etc., and the Report of the Fisheries Survey Committee. From the latter it would appear that there is every prospect that the Union Government, acting in co-operation with the Provincial Administration of the Coastal Province, will continue the Fishery and Marine Biological Survey which was commenced some years ago by the S.S. Pieter Faure. The Board decided to call for certain further reports of an economic nature in addition to the technical reports on industrial production within the Union, of which a series is now being published in the Journal. Among others, an interesting report on the Water Power Survey, now being carried out, was received from Mr. Kantback, C.M.G., Director of Irrigation, and an Assessor Member of the Board. The next quarterly meeting of the Board will probably be held at the industrial centre of Port Elizabeth.



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THE FUTURE OF GOLD PRODUCTION.

Points from Prof. Wm. Frecheville's Report to Inchcape Committee.
—Outlook for the Rand and Congo Goldfields— Possible New Discoveries.

In a recent issue appeared a full account, received by the mail, of the report on Empire Gold Production by Lord Inchcape's Committee, which expressed itself opposed to the suggestion of any bounty or subsidy for the encouragement of the output of the metal. The Committee acknowledged its indebtedness to Prof. Wm. Frecheville, of the Royal School of Mines, who acted as its technical adviser, and reproduced in an appendix some valuable "Notes on Gold Production" (dated 21st November) from that expert's pen. We now give the salient points of these notes:—

AN ALMOST CONTINUOUS INCREASE.

In making a review of the world's gold production during the twenty years from 1897 to 1915, both included (1915 being the last year for which figures are available), it is seen that it has increased from 43 millions sterling in 1897 to 98 millions in 1915. In examining the statistics given annually in the American publication, *Mineral Industry*, it is seen, for instance, in those given for 1915, that forty-four different countries contributed to the world's total, and attention may be drawn to the fact that the large number of different countries contributing to the supply gives a certain amount of stability to the total output. The British Empire is the largest contributor. The following details are given in the above statistics for 1915:—Transvaal, £38,679,918; Australasia, £9,890,446; Canada, £3,896,496; Rhodesia, £3,891,770; British India, £2,369,670; West Coast of Africa, £1,708,580; British Borneo, £271,400; British Guiana, £215,288; Malay States, £72,330; United Kingdom, £3,964; Total, £60,999,862. The production of the British Empire increased from 26 millions sterling, forming 60½ per cent. of the world's production, in 1897, to 61 millions, forming 62 1/3 per cent. of the total, in 1915. On looking at the yearly figures during this period it is seen that the increase has, on the whole, been gradual and persistent, except during the Transvaal War, when the proportion of the world's production contributed by the British Empire fell to 47 per cent. in 1901. This feature of steady increase applies to the world generally, as well as to the British Empire; in both cases, although there are decreasing sources of supply, this feature is more than made up by increases in other directions.

" PERIODICITY " OF NEW DISCOVERIES.

In connection with the decreasing sources of supply, it may be pointed out that the constant improvements in method and appliances tend to make the exhaustion of the older districts slower than may be calculated on the data available at any given time, and, on the other hand, the periodical discovery of new districts makes it impossible to forecast with any degree of accuracy what increases the future may have in store. On looking at the discoveries of new districts made during the last forty years it is found that they certainly show a tendency to occur periodically. This is illustrated by the following table of dates:—

Pilgrims Rest, Lydenburg, Transvaal	1873
Indian Gold Mines (Mysore)	1880
Witwatersrand, Transvaal	1886
West Australia, Kalgoorlie	1893
Klondyke (Yukon), N.W. Canada	1897
Porcupine (Province of Ontario, Canada) ...	1909

The periodicity of the discoveries is no doubt due to the gradual extension of the area prospected. Considering the large areas, both in the British Empire and in other parts of the world, still to be examined, it is exceedingly unlikely that a line should be drawn now, and that this phase of exploration and discovery can be considered to have ended. In connection with this aspect of the subject, attention may be drawn to recent reports regarding the Belgian Congo. It has been known for some time that gold existed in the Kilo district, north-west of Lake Albert Nyanza, and shipments of gold have been made from there for some years. Sir

Alfred Sharpe travelled through those parts recently, and an interview with him was published in *The African World* on 7th July of last year, in which he is reported as saying that the discoveries are assuming great importance and give the impression that a large goldfield exists there, which is awaiting development, but that up to the present it has been the policy of the Belgian Government to reserve the deposits, which are both alluvial and reef, as a Government monopoly. It may be pointed out that in the case of the discovery of payable gold mines in the working of which British companies can take part in regions outside the British Empire—particularly if the neighbouring country is not in an advanced stage of industrial development—the machinery and stores required by these British companies will, to a great extent, be purchased in the British Empire, and the gold they win will be sent there to be realised. On the other hand, in this particular instance one can well understand that there may be, for several reasons, reluctance to admit outside capital or outside white population.

FUTURE OF THE RAND.

The six principal gold-producing countries in the British Empire are the Transvaal, Australasia, Rhodesia, Canada, British India and the West Coast of Africa. The Transvaal.—The increase from 11½ millions sterling in 1897 to 38½ millions in 1912 was large and continuous if the period of the Transvaal War is omitted. After 1912 the figures fluctuate somewhat, but show no decided tendency, either upwards or downwards. The general consensus of opinion appears to be that on the basis of present conditions production has about reached its zenith, and from now on a gradual falling-off may be anticipated. It is true large new areas in the Far Eastern Rand are being developed and equipped, but the new production from this source on the basis of what is at present known is not expected to make good the deficiencies caused by old mines closing down. In order to throw some further light on this subject I have had a statement prepared, dealing with the next ten or twelve years. (See full text of Gold Production Committee's report, price 2d., from any bookseller.) This statement is in the nature of an account in which the new tonnage to be crushed is taken on one side, and the probable loss of tonnage due to mines closing down on the other, and the balance is shown in the last column. From this table it appears that on balance a reduction of over 1,000,000 tons is indicated in 1919, equivalent to 27s. per ton to £1,350,000, the loss of tonnage rising to over 3,000,000 tons in 1920, and that then for the following seven years the further anticipated losses and gains very nearly neutralise each other, but that after that further reduction is indicated. This estimate, however, must be taken for what it is—namely, an attempt to get some approximate figures based on what is known. The problem is complicated by the fact that the ore for the new stamps in the Far Eastern Rand is likely to be somewhat better than that at the old mines closing down; also by the fact that experience in the past shows that the operation of actually exhausting one of the old mines generally takes longer than originally anticipated, and, further, by the uncertainty as to possible extensions of the ore-bearing beds beyond their present known limits. It will be noticed that all these factors operate against the calculated fall of production.

AUSTRALASIA, CANADA AND RHODESIA.

Australasia.—During the first part of the period of twenty years under review the production increased from about 11 millions sterling in 1897 to a little over 18 millions in 1903, owing to the growing output of West Australia. After 1903, however, there was a steady decline, and in 1916 the output of gold had shrunk to 8½ millions sterling. The present indications are that this decline will continue, unless new gold fields are opened out, of which there are as yet no indications. An examination of a map of Australia on which the

goldfields are marked will, however, I think, justify a hopeful view with regards to the future. It will be seen that the goldfields are fairly well scattered over the known coastal regions, and the idea appears to be justified that probably when the central and northern parts have been travelled over and properly prospected other goldfields will be found. Canada.—The production of the Yukon is likely to continue to decrease, but this should be more than counterbalanced by the position in Northern Ontario, where the older mines are in a sound position, and small new producers are being discovered from time to time. An important factor in the future possibilities of Canada as a gold-producing country lies in the large expanse of unexplored country, which stretches up north from the comparatively narrow occupied belt extending from the Atlantic to the Pacific. Rhodesia.—The production shows a gradual and continuous increase from nothing in 1897 to just under four millions sterling in 1916. The gold is derived from a number of quartz mines, worked on modern lines, with considerable reserves of ore, and although one or two mines are known to be failing, there is no reason to apprehend any sudden change.

India.—The principal producers are the quartz mines in Mysore, which have been very considerable and consistent producers for the last thirty years, worked on sound lines, with good reserves of ore opened out ahead of immediate requirements, and nothing is known to indicate any considerable change in the position, or of any distinct signs of failing. On the other hand, they are becoming very deep, and in the ordinary course of events a falling off in production would seem to be probable in the not far distant future unless new mines are opened up. So far there are no reports or suggestions of new gold discoveries in India, but some of the country north of it has been reported by travellers to be gold-bearing. West Coast of Africa.—The production has increased slowly from £200,000 in 1897 to a little over a million and a half sterling in 1916. No doubt, if it were not for the climate, the production would have been much greater. Nothing is generally known to indicate that any serious falling off is looming ahead. The climate, as already remarked, has been the great drawback to the industry.

GENERAL CONCLUSIONS.

Assuming that gold mines will soon be able to work again under normal conditions, and that the effect of the war will be limited to an increase of working costs in some cases of as much as 2s. per ton, it does not appear to me likely that such a rise would have a serious effect on the production of gold. On the above assumption that the industry will go on in its normal course, and in the lights of what is known about the principal gold-producing districts of the Empire, it appears that a falling-off may be expected in the Transvaal and in Australasia, but an increase in Canada, and that there is no very plain indication as to the probable course of events in other directions. Setting the probable increase in Canada against the decrease in Australasia, there remains the anticipated falling-off in the Transvaal and a consequent probable decrease of about four millions sterling annually in the total gold production of the Empire in the near future. Against this must be set the possibility of unexpected increases and of new discoveries—two factors of such an uncertain nature that it would be idle to attempt to appraise them accurately. There is so much unprospected territory in the Empire that, personally, I look forward to further discoveries, sooner or later, with a good deal of confidence.—(Signed) WM. FRECHEVILLE.

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THE PROGRESS OF THE INDUSTRIAL RECONSTRUCTION COUNCIL.

Report for 1918—Success of "Trade Parliaments."

THE report of the Industrial Reconstruction Council in Great Britain for the past year has just been issued, and the following passages are extracted therefrom: The close of this eventful and wonderful year brings also to an end the first year's work of the Industrial Reconstruction Council. The Council was founded in December, 1917, as a propagandist body for the encouragement of the Trade Parliament movement, and for the education of the business and general community to a new conception of industry and to a true appreciation of the industrial situation. The success which has attended all our efforts, the crowded audiences at our meetings, the eager requests for our speakers, the almost embarrassing demand upon our literature, are a measure of the universal interest now taken in industrial reconstruction and an indication of the real progress which the movement for industrial self-government has made. In our last report, published at the half-year, it was stated that there was hardly any trade that had not accepted the underlying principles of the Whitley report. Before reviewing in detail the activities of the I.R.C., to which we venture to attribute a leading share in this result, it may be useful to give a list of the joint bodies now actually in existence and already at work on the problems of reconstruction and industrial development. It will be remembered that these are of three types:—

(a) Industrial Councils, established under the aegis of the Ministry of Labour in trades already well organised on both sides.

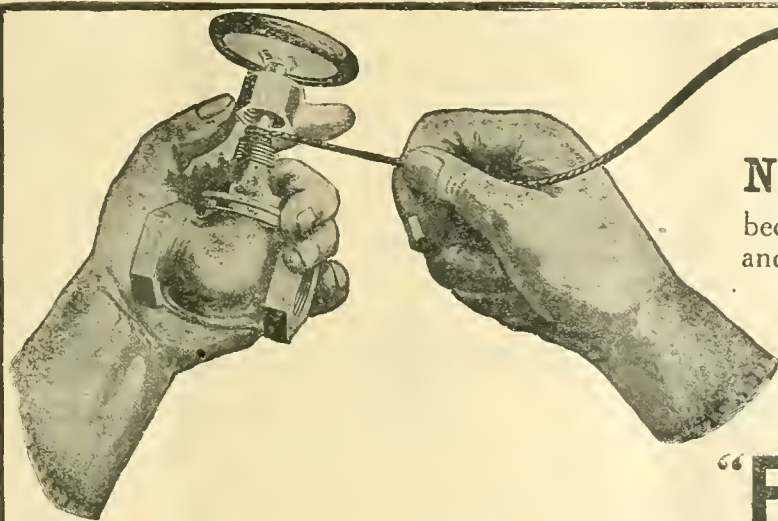
(b) Interim Industrial Reconstruction Committees, formed with the help of the Ministry of Reconstruction in trades where the degree of organisation is not sufficient for the adoption of the constitution of an Industrial Council. These committees are in all cases encouraging organisation in their

respective trades, and will eventually transform themselves into Industrial Councils.

(c) Trade Boards, set up by the Ministry of Labour in trades where the organisation on the workers' side is poor and the wages are low. These bodies have done and are doing good work, but in so far as they are imposed by the Government upon a trade, with the primary function of settling rates of pay, they cannot be placed in the same category with the other two classes of bodies which are created by the initiative of the trades themselves, and are concerned not so much with the questions of wages and profits as with the welfare and development of the industry as a whole. It is hoped that as the status and organisation of an industry improve, the Trade Board may be superseded by an Interim Committee or an Industrial Council.

(d) Provisional Committees, which have been formed to draft constitutions for Joint Industrial Councils.

The formation of Trade Parliaments in every industry may be regarded as the foundation of the future structure of our national industrial organisation. Many anxious problems still remain to be dealt with and can only be solved on this basis. One of the most urgent is the release of our industries from Government control. In the early days of the movement we had frequently to meet the view that constructive co-operation between capital and labour was not possible. Experience has now proved the contrary. It is remarkable that almost without exception seventy or more Trade Parliaments are to-day busily engaged in agitating for the full return of civil liberties and the abolition of bureaucratic control. Having obtained their freedom, our industries will develop quickly and surely the enormous possibilities latent in them.



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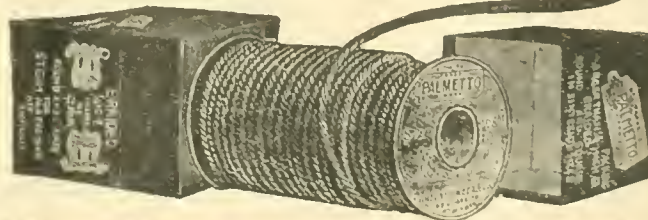
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THE BOOM IN THE DIAMOND MARKET.

Detailed Report on Conditions in London.

The diamond market, according to the cables, is booming, and the fact is confirmed in the mail reports to hand. The "Financial News" says:—"Last week we reported that the position of the Diamond Market was one of great strength. To-day we are not only able to confirm the statements as to conditions then ruling, but to assert that further substantial progress has been made. As regards the Continent, our Special Correspondent, who spent about a fortnight at Antwerp, returned during the week, and reports that although some little time will elapse before the majority of cutters are able to arrange their affairs, the feelings is one of hopefulness, and some firms have already resumed work on a small scale. Inquiries for goods for the Amsterdam cutters are also on the increase, and conditions in that centre are said to be very encouraging.

"As far as the English trade is concerned, quite a large number of Americans are now on this side and are buying most freely. The Diamond Syndicate are showing during the next few days a shipment of South-West diamonds, and have raised the prices of these goods about 5 per cent. We are informed that notwithstanding this increase applications for the stones are abnormal. This is, of course, the outcome of the policy of restriction of output—a policy which is proving beneficial alike to producers and the trade. Very large sales of brilliants have also taken place, and no doubt

whatever is entertained that business will still further expand during the next few weeks.

"As regards industrial goods, the position continues remarkably sound. The characteristic of this branch of the trade is the increasing number of purposes for which the stones are being utilised. Merchants in this line are buying ahead to meet the requirements which they foresee. Electrical undertakings should make big demands upon them, while precision in the motor industry cannot be so successfully met by any other means. Everyone, in fact, is most sanguine as to the future of the diamond trade.

"With one or two exceptions, investors seem for a long time past to have fought shy of diamond shares as channels for investment, possibly because of the lack of information concerning trade conditions. The satisfactory news we are enabled to impart should go a great way towards cheering up actual holders of shares, particularly the views of various of our correspondents that with the demand out-stripping the supply a beneficial effect must be exerted upon the price of stones. In addition to the regular business of the mining companies, there are not infrequently pleasurable surprises in store in the shape of unexpected finds, as in the case of the Jagersfontein diamond reported from Kimberley at the end of last week. At a low computation, a stone of this kind should be worth £40,000. In itself the discovery should mean an additional profit of such amount, or virtually 4 per cent. on the nominal capital of the company. A find of this nature gives a speculative flavour to diamond shares in addition to their intrinsic values."

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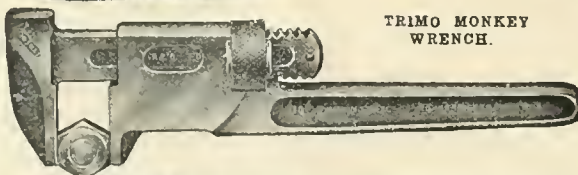
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RHODESIAN DIVIDENDS: FULL LIST FOR 1918.

The British South Africa Company publishes the following list of dividends which have been declared by Rhodesian mining companies during the year ended December 31, 1918:

Name of Company.	Rate declared or its equivalent Subject to Income Tax. Per cent.	Amount absorbed.
Eldorado Banket Gold Mining Co., Ltd.	15	£45,000
Falcon Mines, Ltd.	20	80,000
Gaika Gold Mining Co., Ltd.	5	13,675
Globe & Phoenix G.M. Co., Ltd.	82.8	165,614
Kimberley (Mash.) G.M. Co., Ltd.	1½	4,000
King (Asbestos) Rhodesia, Ltd.	7½	9,367
Lonely Reef Gold Mining Co., Ltd.	30	81,302
Rezende Mines, Ltd.	20	23,687
Rhodesia Chrome Mines, Ltd.	10	6,000
Rhodesian & General Asbestos Co., Ltd.	5	20,000
Shamva Mines, Ltd.	15	90,000
Wankie Colliery Co., Ltd.	15	76,995
		£615,640

The total cash dividends declared by Rhodesian mining companies to December 31, 1918, amount to £6,902,987, and this figure does not take into account dividends declared by

Rhodesian development and miscellaneous companies in cash or scrip, amounting to over £2,900,000, nor dividends paid by Rhodesian mining companies or syndicates.

The following dividends also have been declared by Rhodesian development and miscellaneous companies during the year ended December 31, 1918:—

Name of Company.	Rate declared or its equivalent Subject to Income Tax. Per cent.	Amount absorbed.
Bechuanaland Exploration Co., Ltd.	6½	£20,059
Bechuanaland Trading Association, Ltd.	6.78	3,577
Charterland and General Exploration and Finance Co., Ltd.	5	8,191
Crescens (Matabele) Mines & Land Co.	7½	5,453
Gold Fields Rhodesia Development Co.	10	125,711
Mashonaland Agency, Ltd.	9	13,466
New Bulawayo Syndicate, Ltd.	6½	3,010
Rhodesia Land Bank, Ltd.	5½	9,333
Rhodesia Railways Trust, Ltd.	1	80,231
Tobacco Co. of Rhodesia and S.A., Ltd.	10	1,868

£273,899

TWENTY-FIVE YEARS AGO.

(From the "S.A. Mining Journal" of March 3, 1894.)

We are pleased to learn that the debentures reserved for issue in South Africa by the Consolidated Gold Fields of South Africa, Ltd., have all been taken up, applications for a considerably larger amount having in fact been received. The London issue was also attended with similar success, the total sum which subscribers were desirous of taking up greatly exceeding the amount required. The fact is of some importance as indicating the confidence of the public both in one of the largest financial institutions operating in South Africa, and also in the class of securities, and more particularly deep level undertakings, in which it is intended that the bulk of the money shall be invested.

* * * *

Mr. Robert Williams, consulting engineer to the Zambesia Exploring Company, has left Johannesburg for London, the principal object of his trip being the making of necessary arrangements in connection with the newly-floated Bulawayo Syndicate, which has recently been reconstructed, and the capital increased from £12,000 to £40,000 to enable the Consolidated Gold Fields of South Africa, Ltd., and the firm of Barnato Brothers to acquire substantial interests in the venture. An account of the proceedings at the recent shareholders' meeting in London will appear in our next issue. On Mr. Williams' return to South Africa he will at once proceed up-country, accompanied by Mr. John Hays Hammond, the latter firm's well-known consulting engineer.

* * * *

GELDENHUIS DEEP.—Considerable progress has been made during the past six weeks with the erection of the new compressor plant, of which a full description appeared in a recent issue. All the cylinders have been fixed, and by the time the necessary pipes have been laid, which will be in the course of a few weeks, everything will be in readiness for a start to be made. The development of the mine has now reached a stage at which the assistance of a large number of drills will be extremely useful. Driving upon three levels can be carried on simultaneously. At the end of each succeeding six months at the outside, a new level will be able to be started, and, as it is extremely important that a large tonnage of ore should be placed in sight as rapidly as possible, there can be no question as to the wisdom of the policy that will be pursued, even assuming a slightly higher cost for machine as opposed to hand labour.

ROSE DEEP.—Under the energetic management of Mr. Skinner rapid progress is being made at this property in the sinking of the shafts, as will be seen from the monthly returns which will appear in our next issue. Steam dumps have been fixed, which are proving of considerable assistance in coping with the water, which, at the start, greatly impeded operations.

* * * *

The market has been very firm during the whole of the past week, prices advancing quietly and surely all along the list. General business, however, has remained in the same dormant condition which has characterised the market since the commencement of December last, the living of the genuine brokers being reduced to the very starvation point and the outside investors remaining conspicuous by their absence.

Colonel Edward Frewen, C.B., a Sussex county magistrate for forty-seven years and alderman of East Sussex County Council, has just died, aged 69. Colonel Frewen was a director of Consolidated Gold Fields of South Africa and of Gold Mines Investment Co.

The South African Salt Owners' Association was represented at the recent conference of manufacturers in Johannesburg by Mr. A. T. Fincham, who explained that the association had produced over 500,000 bags of coarse salt during last season, and that this quantity could be quadrupled if better means of transport were available. The association was satisfied that the country could be rendered self-supporting as regards salt and its by-products if some system of light railways could be provided. The association also considered it advisable to create an export trade in the southern hemisphere. It was thought that vessels returning to Australia, Japan, and East Africa might load salt at a low rate of freight or as ballast. The establishment of a central factory for the manufacture of by-products of salt was also considered necessary, and of scarcely less importance is the provision of storage at railway stations. The association was further of opinion that the Government should impose an import duty on salt, and furnish such scientific assistance as would enable the industry to be run on the most up-to-date lines.

THE WEEK IN THE SHAREMARKET.

The South-Western Debacle—An Irregular Market—Fall of Springs Mines.

LAST Friday, after going to press, there was a bit of excitement in diamond stocks. Makganyenes, for which a big buying order had been in the market for some time, after its completion at 52s. came to a standstill, upon which an attack was made on the stock, bringing the price down to 35s.—40s. The holders at high prices of South-Westerns took the alarm and began offloading to the stable brokers at the top price of £8 17s. 6d. A halt was soon called to that game, whereupon a *saure qui pent* began, ending with sales at £5. There is a saying, dating back from classical days, which, translated, means "Let the buyer beware." It is occasionally forgotten nowadays. On Saturday the market was again weaker all round, with the exception of Modder B's, with an advance of 5s. Springs got another shaking, closing at 61s. 6d.—62s. As written above but, unfortunately, not published in time, the buyer did not beware and found himself the holder of South-Westerns at 177s. 6d. at the close. Monday's call was adversely affected by the fall in Springs and the collapse of South-Westerns. The former indeed improved 1s., and though it is difficult to disentangle facts from a mass of rumours, it appears pretty certain that the mine is all right. Modder B. was the only other stock to the good. All the other favourites suffered more or less. At the opening on Tuesday there was a sale of South-Westerns at 50s., from which they recovered to 60s. buyers and subsequently made 80s. in the face of the statement published in the daily papers. Prices improved at the call in all the better stocks. The weak feature was Leeuwpoots, and with it went African Farms. The cause of the former's weakness it attributed to labour difficulties, which it is understood will shortly be remedied. The market was dull on Wednesday, with a downward tendency, which included all the Modder stocks, with the exception of the Deeps, which were unchanged. South-Westerns stood at about 75s. Southern Van Ryns have been falling daily. Thursday showed a further weakening all along the line, with an unexpected advance of 1s. in African Farms. The outside dealings for the week, apart from South-Westerns, which were last quoted at 70s.—80s., consisted of:—Sales: Makganyenes, 40s. to 41s.; Sakalavas, 6s. odd lots; Compound Diamonds, 2s. 5d.; Monteleos, 13s. 6d. to 14s.; Phoenix, 1s.; New Farms, 1s. 10d. Buyers and sellers: Lydenburg Lands, 2s.—2s. 3d.; Henderson's Estates, 4s. 6d. buyers; Mauss Syndicate, 40s. sellers.

The market was irregular on Friday morning with advances in African Farms, Geduld Props, Modder B., West Springs and Leeuwpoots, and a falling-off in Government Areas, New Modders, Rand Selections, Van Ryn Deeps and Brakpans. The following shows the alteration in prices:—Sales: African Farms, 14s. 9d.; Apex, 6s. 6d.; Brakpans, 65s.; Eastern G.M., 1s. 3d.; East Rand Mining, 18s.; Frank Smiths, 3s. 8d.; Government Areas, 94s.; Knight Centrals, 5s. 9d.; Lace Props, 21s. 6d. and 21s. 9d.; Modder B., £8; Modder Easts, 18s. 3d.; three-year Options, 1s. 1d.; New State Areas, 23s. 6d.; Tweefontein ordinary, 21s.; West Springs, 25s. 3d.; Wit. Deeps, 11s. Buyers and sellers: City and Suburbans, 7s. 3d., 7s. 6d.; Crown Diamonds, 13s. 10d., 14s.; East Rand, 6s., buyer; Geduld Options, 12s. 9d., 13s. 3d.; Hume Pipes, 28s., 28s. 6d.; Leeuwpoots, 22s., 22s. 9d.; New Modders, £26 7s. 6d., £22 12s. 6d.; Rand Selections, 75s., 77s. 6d.; Sub Nigels, 22s., 22s. 9d.; 10s. paid, 12s., 12s. 9d.; Alkalis, 30s., buyer; Van Ryn Deeps, 66s., 67s.; West Springs Options, 10s., 10s. 6d.

	Fri., 21st.	Sat., 22nd.	Mon., 24th.	Tues., 25th.	Wed., 26th.	Thurs., 27th.
African Farms . . .	13 3*	13 0*	13 6†	13 0	13 0	11 0
Anglo-Amer. Corp. .	36 0†	—	—	25 0*	—	25 0*
Apex Mines	6 9	6 6*	6 6*	6 6*	6 6*	6 6
Bantjes Cons. . . .	2 1†	2 1†	1 11*	1 9*	—	1 9*
Brakpan Mines . . .	67 0†	66 0*	65 8*	66 6*	66 6*	66 0
Breyten Colls. . . .	11 9*	—	—	—	—	12 0
Brick and Potter. .	—	—	—	—	6 0†	—
British South Africa	19 0*	21 0†	21 0†	—	21 0†	21 0†
Bushveld Tins . . .	0 11*	0 10*	0 10*	0 10*	1 3*	1 0†
Cinderella Cons. . .	3 3*	3 6*	3 6*	3 6*	3 9*	—

	Fri., 21st.	Sat., 22nd.	Mon., 24th.	Tues., 25th.	Wed., 26th.	Thurs., 27th.
City and Subs. . . .	7 9	8 0†	8 0†	8 0†	8 0†	7 0*
City Deeps	—	—	55 0†	55 0†	51 6*	54 3
Clydesdale Colls. . .	22 6*	23 6*	23 6*	23 6*	25 0†	23 6
Con. Investments . . .	—	26 0*	25 0*	25 0*	25 0*	25 0*
Con. Langlaagtes . .	17 0*	17 0*	17 0*	17 0*	18 0*	18 0*
Con. Main Reefs . . .	10 3*	10 3A	10 3A	10 6*	10 9	10 6*
Do. Options	5 9*	—	6 6†	5 9*	5 6A	5 6*
Durban Road, Dps. .	8 0*	9 6†	8 9*	7 6A	8 9*	8 9*
East Rand Coals . . .	2 3	2 3	2 6†	2 3	2 3*	2 5*
East Rand Deeps . . .	1 0*	1 0*	1 0*	1 0*	1 0*	1 1†
E.R. Minings	17 6*	—	18 0	—	17 6*	17 6*
East Rand Props. . .	6 6†	5 9	5 6*	5 9*	5 9*	5 9*
East Rand Debs. . . .	£70*	£70*	—	£70*	£70*	—
Con. Mines Sel. . . .	—	25 6	—	25 6†	21 0*	—
Coronation Freeholds	1 0*	—	1 0*	1 0*	1 1*	1 0
Crown Diamonds . . .	13 3	13 0	12 9*	13 3*	14 0	13 9
Daggafontein Mines .	25 0*	—	25 0*	25 0*	25 0*	25 0*
Eastern Golds	1 3*	1 3*	1 3*	1 6†	1 3*	1 3*
Frank Smith Dias. . .	3 11	3 9	3 9	3 7*	3 6*	3 6*
Geduld Props.	46 3	46 3	45 0*	46 0	45 3*	44 6
Glencoe Colls.	6 0*	—	6 0*	6 0*	—	6 0*
Glynn's Lydenburgs .	24 0*	24 0*	25 0†	—	24 0*	24 0
Govt. Areas	95 0*	94 9	93 9	95 0	94 9*	91 5
Hume Pipes	27 9*	28 0*	28 0*	28 0*	28 0*	27 9*
Jhb. Bd. of Execut. .	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	4 7*	4 6*	4 7*	4 6*	4 6*	4 7*
Klerksdorp Props. . .	—	1 0*	—	1 0*	—	—
Knight Centrals . . .	5 8*	5 10	6 1	6 2*	6 0*	5 10*
Lace Props.	21 3*	21 3*	21 6A	21 6*	22 0	21 6*
Leeuwpoot Tins . . .	23 6	23 0*	23 6†	21 3*	21 0*	21 3*
Luipaardsvlei Est. .	—	—	—	—	—	1 6*
Lydenburg Farms. . .	9 0†	8 7*	8 6*	8 6*	8 7*	8 7*
Middelvlei Est. . . .	—	—	1 0*	1 0*	1 0*	1 0*
Modder B's	155 0*	160 0*	161 0*	160 0*	157 6	156 0*
Modder Deep	150 0†	145 0*	146 0*	145 0*	146 6	145 0*
Modder Easts	19 0	18 9	18 9	18 9	18 6*	18 3*
Do. Options (3yrs.) .	4 10	4 6A	4 10†	4 6*	4 4*	4 2*
Do. Options (4yrs.) .	5 6*	5 9*	5 9*	5 6*	5 4*	5 3
Natal Naviga. Colls. .	—	21 0*	21 0*	21 0*	—	—
National Banks . . .	£15†	£15†	£15†	£15†	£14‡	£15†
New Boksburgs . . .	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
New Eland Dias. . . .	27 6*	27 6*	—	29 0†	25 0*	25 3*
New Era Cons.	9 6*	9 6*	9 6*	9 7	9 7	9 6*
New Geduld Deeps . .	5 9	5 6*	5 6*	5 6*	5 9*	5 6*
New Heriots	12 6*	15 0†	15 0†	12 6*	12 6	12 3*
New Kleinfonteins . .	12 0	12 3*	12 6	12 10‡	—	12 3
New Modders	£26‡A	£26‡†	£26‡†	£26‡†	£26‡	£26‡*
Nigels	4 0*	4 0*	4 6*	4 0*	4 0	4 0*
Nourse Mines	—	12 6*	12 0*	—	—	—
Premier Pref.	152 6*	152 6*	—	—	—	—
Pretoria Cements . .	66 6	66 0*	66 0	65 0*	65 6A	64 6*
Princess Estates . . .	3 6	3 1*	3 1*	3 3*	—	3 4
Rand Colls.	3 6†	—	—	3 9†	3 9†	3 9†
Rand Nucleus	1 11*	2 0†	1 11	1 10*	1 10*	1 10
Rand Select. Corp. . .	—	76 0*	76 3*	—	—	77 6
Randfontein Deeps . .	5 0*	5 3†	5 3†	5 3†	5 3†	5 0
Randfontein Est. . . .	14 9*	14 6*	14 6*	15 0	14 6*	14 6*
Roberts Victors	—	12 6A	—	12 6*	12 6A	—
Rooibergs	1 6	1 2*	4 1	5 0	5 3*	5 3
Rodepoort Un.	—	2 6*	2 6*	3 0	2 9*	3 0*
Ryn Nigels	3 6*	—	—	3 6*	3 6	—
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*	1 9†
Simmer and Jacks . .	—	6 0†	—	—	—	—
Simmer Deeps	—	—	—	1 6*	1 6*	—
S.A. Breweries	32 6*	32 6*	—	33 0*	—	33 0*
S.A. Lands	6 1	6 0	5 10*	5 11*	5 10	5 9*
Springs Mines	62 3*	62 3	62 9	62 9	62 9	62 3
Sub-Nigels	24 0*	24 0	22 6	23 3	23 0*	22 6*
Transvaal Lands . . .	—	25 0†	25 0†	25 0†	23 0*	23 0
Trans. G.M. Est. . . .	16 0	15 6*	16 0	16 0	15 6*	16 0†
Van Ryn Deeps	67 6*	67 0*	67 6	67 0*	67 0*	67 0*
Village Deeps	16 3*	16 3*	16 3*	16 6*	16 3*	16 3*
West Rand Cons. . . .	—	3 0*	3 0*	—	—	—
Western Rand Est. . .	—	1 0*	1 6*	1 6*	1 6*	—
Witbank Colls.	—	—	—	—	60 0*	—
Wit. Deeps	—	10 0*	—	—	9 0*	—
Wolluters	3 0*	3 1*	3 0*	3 0*	3 0*	3 1*
Zaaiplaats Tins	12 9†	13 0	12 9	12 9	12 9	12 6*
Union 5 per cent. . .	£102‡A	£102‡A	£102‡17	£103	£102	18 9 £103†
New States	23 0A	23 6	23 3	23 3	23 9	23 6*
S. Van Ryns	10 6*	10 7*	10 6	10 0*	10 0*	9 6
S.A. Alkali	29 0*	30 0*	—	—	28 6*	28 6*
Tweefontein Colls. . .	22 6*	22 6*	22 6*	—	22 6*	22 6*
Tweefontein Pref. . .	22 6*	22 6*	22 6*	—	22 6*	22 6*
West Springs	25 9	25 0*	24 6	24 7‡	24 6*	24 6
Do. Options	10 9	10 0A	9 6*	9 9*	—	9 6*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

REPORT OF THE AMERICAN COMMITTEE ON GOLD.—II.

Relief Measures Proposed by Gold-Mining Industry in Responses to Questionnaire.

In October, 1918, the British Treasury appointed a strong commission representative of the leading financial interests of the Empire to investigate into the effects of the war on gold production in the British Empire. The personnel of this commission includes Lord Inchcape, chairman, Sir Thomas Elliott, Sir Charles Addis, and W. H. Goshen. William Frechville, mining engineer, advises on technical mining problems. This commission is making a sweeping inquiry into the conditions at gold mines and possible measures of relief. Especial attention is being given to the desirability of granting the demands of the gold producers for a revision of the selling price of their products to compensate for the increase in cost of labour and supplies, to means of encouraging the mining of low-grade ores, and of stimulating the production of gold in general.

The producers of South Africa and Australia have requested the Treasury to contract for all gold mined by them for a term of ten years at a price calculated to ensure maximum production. The seriousness of the situation in those countries is reflected in a statement by E. A. Wallers, chairman of the Transvaal Chamber of Mines, to the effect that out of 46 companies operating in the Transvaal, 6 were running at a loss and 15 were barely paying expenses. Confirmation of this statement is given by Sir Lionel Phillips, who says, according to an article published in September, 1918, that a large number of the mines on the Rand will have to shut down unless some relief can be obtained.

EXEMPTION FROM MILITARY SERVICE.

The exemption from draft of necessary employees and the placing of labour for gold mines in the deferred class, has been granted to a certain extent by recent rulings of the War Department; gold mining has been declared an essential industry and the matter is one for local draft-boards to decide whether individual men are necessary to the industry.

ASSISTANCE OF UNITED STATES EMPLOYMENT SERVICE.

The assistance of the United States Employment Service in securing and maintaining a sufficient labour supply is asked. The United States Employment Service can, if authorised by proper Government action, assist the gold miners in the returning to the mines experienced men who have gone into other war industries for patriotic or other reasons. It can also transfer men now employed in less essential industries. Some advertising could properly be undertaken by the gold mines to impress upon labour that gold mining is regarded as an essential war industry and that men necessary to that industry are subject to deferred classification by the local draft-boards. The Director of the Bureau of Mines, as certifying officer to the War Department on industrial furloughs for metal mining and metallurgical industries, can aid greatly in the rehabilitation of the labour supply of the gold mines. Negotiations are now under way whereby men returned from France for recuperation may be used to some extent in industry where their health would be benefited during the period of their recuperation; this would release more able-bodied men for the more arduous tasks, such as mining. Allotment of labour to mines must be guided by intimate knowledge of the gold mines requesting assistance, otherwise labour might be wasted on unimportant projects. Because of this fact, and the fact that wages are higher in other industries, and on account of the isolated location of many of the gold mines it is difficult for the United States Employment Service to recruit labour for gold mines. Relief through the War

Department would not be hampered by these objections since no man is to be furloughed unless willing. The men would be properly cared for and paid at some wage fixed by the Government. It is the opinion of this committee that the labour situation is the most serious problem confronting the gold miner and that this should be given consideration by the proper Government agency. It is only through Government action as above outlined or through the importation of labourers as discussed elsewhere, that the labour situation during the war and the readjustment period after the war can be greatly improved. Furnishing supplies to gold miners by the Government at prices more nearly comparable with pre-war figures than now paid would cause great dissatisfaction at mines producing other metals and in other important industries, and it is not considered feasible. A central purchasing agency for buying supplies would give some relief to the small miner as suggested elsewhere.

ABOLISHMENT OF TAXES.

Excess profits were imposed at few gold mines in 1917. The total amount paid as reported by mines answering questionnaires was under \$500,000, though some disputes for additional amounts are still unsettled between companies and tax officials. Proper allowances should be given mines for depreciation of plant and depletion of ore by tax officials; much remains to be done to educate tax officials to appreciation of the proper rate of such allowances. Should a small group of miners or prospectors form a small company of, say, \$10,000 to \$100,000 capital, and expend the entire capital but strike it rich and take out as net profit an amount equal or more than the capital put in, in such case they would be obliged to turn over to the Government nearly half of their profits. Under such conditions the search for new gold deposits is greatly discouraged by the tax. The elimination of all excess-profit taxes on gold mining and the encouraging of maximum outputs might in reality bring in greater revenue to the Government than the tax, for larger dividends paid to shareholders would mean greater revenue from individuals.

PREFERRED CLASSIFICATION FOR FREIGHT.

Gold mining has been declared an essential industry and given a Class C rating. As such it is entitled to receive priority orders for freight, etc. The reduction of freight-charges on ore shipments where there has been a recent advance, as in Colorado, is a measure that should be allowed. The cost of freight on shipments of materials to gold mines is but a small part of the total cost of mining.

DEBRIS COMMISSION (CALIFORNIA).

This applies to California only. The Committee has received many general statements to the effect that the Commission has been especially active and that their orders for expensive construction are causing great hardship at some of the lode mines at this time, when costs are high and profits from gold mining are abnormally low.

PREFERRED CLASSIFICATION FOR ELECTRIC POWER

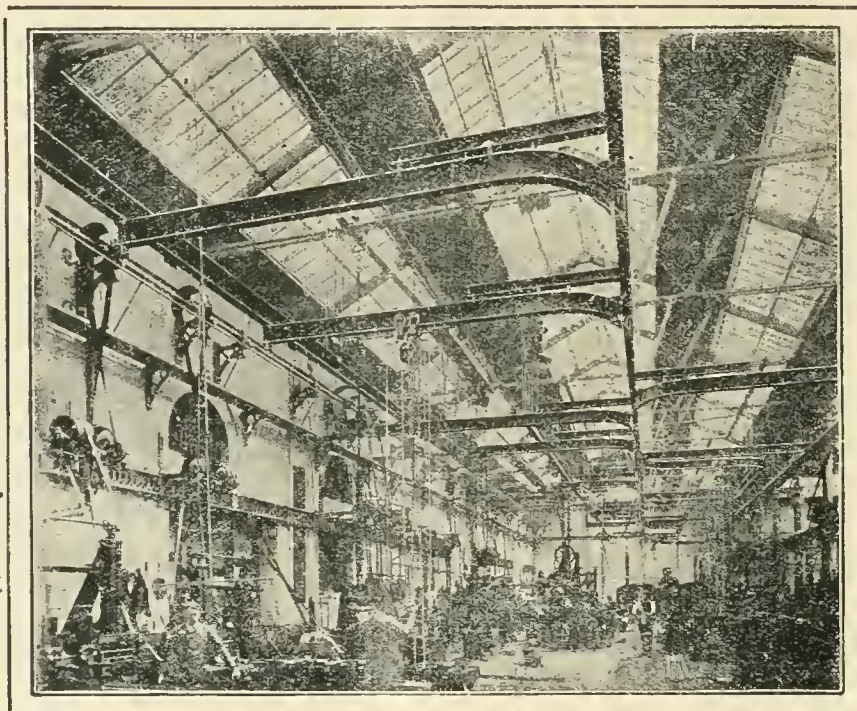
In California there was a shortage of power caused by lack of mains and the action of the State Power Administration in discriminating against gold-dredging caused general dissatisfaction. It was rightly felt that other forms of power consumption, such as amusements, excess lighting facilities, etc., could be curtailed with far less loss to industry. The gold mines should have a high-class rating with regard to power consumption, and power should be curtailed only when there is great necessity for such action.

(To be continued.)

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MINE MANAGERS IN CONGRESS.

Proceedings at Annual General Meeting—Mr. John Wessels Succeeds Mr. Bulman as President—Presidential Address—Speeches by Sir Evelyn Wallers and Sir H. Ross Skinner.

THE annual meeting of the Association of Mine Managers was held last week, Mr. E. H. Bulman, the President, presiding over a large gathering. The President opened his address with a reference to the victory over our enemies by the forces of our Empire and her Allies, and proceeded: It is a matter for extreme thankfulness that the terrible loss of life and devastation caused by the war is so nearly ended. It is to be sincerely hoped that before long there will be peace throughout the world, that a settlement of the chaotic conditions and disagreements which exist in various parts of Europe will be arrived at, that in those countries where a revolution in the form of government has taken place, a free, fair and strong rule may soon be established, and that the discontent and ambitions of labour may be kept within the bounds of reason, so that further and greater disaster may not follow upon the heels of the great war which we trust is now a thing of the past.

EFFECT ON THE INDUSTRY.

The effect of the war on the gold mining industry has been that working costs, since its commencement, have steadily increased, until at the end of the fourth year of the war many low grade mines which, under normal conditions, were profitable, are working at a loss, and must cease operations, thus throwing numbers of men out of employment, unless circumstances allow of a reduction in costs in the near future. It is to be hoped, however, that conditions will now rapidly improve and obviate the necessity to curtail any work. I think there is great cause for thankfulness that this industry has been able to keep going as it has done under very difficult conditions, and the thanks of the whole community of the Rand, and indeed of South Africa, are due to the Executive of the Transvaal Chamber of Mines, which has steered us so successfully through such strenuous times.

The war, the floods, and the influenza stand out in my mind as the three chief causes of loss to the industry and anxiety to the mine manager. There were, however, other causes which have been detrimental to successful operations. Prominent amongst these has been the loss of time owing to strikes—of which there have been several of varying magnitudes—and it is most regrettable that in every one of those cases the men have acted on the spur of the moment without adhering to the agreement between the Chamber of Mines and the Unions, whereby no strike should take place without due notice and until the matter in dispute has been before a Board of Reference. This is especially regrettable, since Boards of Reference have dealt with so many other cases in dispute which otherwise might have led to strikes, without once failing to arrive at a settlement sufficiently satisfactory to both parties to end the trouble. It is very encouraging that these impromptu strikes have not, however, spread, but have evidently been recognised by the rest of the workers as the wrong procedure. This shows that a prevailing spirit of fairness and common sense exists amongst us which promises well for the future. After all, as Sir Evelyn Wallers pointed out at our last annual meeting, the Unions are gradually becoming more closely organised, and I think, therefore, the chances of hot-headed and precipitated action will become less as time goes on.

BOYCOTT OF KAFFIR STORES.

Whilst on this subject I feel that some mention should be made of the boycott of Kaffir stores by the mine natives and to the attempted strike movement later, both of which indicate some sign of organisation amongst the natives. In my opinion, this movement was palpably the result of example, and the first attempt at imitation amongst natives of the strike methods adopted by the white people. There is a great danger in natives listening to any upstart agitator who may try to create an organisation without authority

from the native mine workers as a whole. Moreover, the native must remember that his case is not parallel with that of the white worker, as his terms of employment are entirely different, since the native is engaged for certain work at agreed upon terms of his food, etc., for a specific number of shifts, with the Government Native Affairs Department to see that both employer and employee carry out their part of the contract. There is no doubt that anyone trying to influence the natives should be very severely dealt with.

WORKING COSTS.

The question of working costs is one which no mine manager ever gets away from, and the steady increase has called for explanations, which are adequately furnished by war conditions. I believe that if the increased costs due purely to war conditions could be clearly defined it would be found that costs have in comparison with previous years actually improved. White wages have been increased during the year to meet the extra cost of living, but I do not think this would have affected the costs generally to such an extent had the class of labour shown a corresponding improvement or even remained as good as before the war. Good, resourceful, and efficient men of all classes, including officials, are more scarce than ever, and it seems to me a pity that the keen interest in the success of a mine, which in past days used to be taken by every white man on the property, has diminished, and that men are inclined to forget that it is only by the combined effort of everyone to help the general cause, that the best results can be obtained. I am a strong believer in good wages, earnings, and salaries, but unless good, keen work is given in return and the best results thereby obtained, high wages cannot be paid. I hope that our numbers of the right class of men will be increased when our armies are released from war duties, and that the old zealous spirit and pride of work will be restored. Native wages have increased because the native is paid to a certain extent in kind, and the cost of foodstuffs, etc., has gone up considerably. But the chief point for a manager to keep his eye on in this division of his costs is the efficiency which can be got out of the native, and I am afraid there has not been much headway made in this direction during the year. A manager's chief difficulty in this connection is that as soon as he attempts to alter systems of working he is up against old-established customs which are very difficult to break down. I believe most managers are in favour of piecework systems where they can be applied, and if there has been any improvement in native efficiency at all, I believe it has been due to piecework tramming. The piecework payment of machine boys has become more common, but though very satisfactory on some mines, the varying conditions on others makes its application more difficult, and no satisfactory general system has yet been adopted.

HAMMER WORK.

Piecework rates for hammer work is one of the oldest customs of the Rand, and though different rates and conditions have been tried lately, I think I am right in saying that they had to be abandoned owing to the prejudice in favour of the old customs. Personally, I cannot see how much improvement can be made on the present systems of payment for this work. I think that every hammer and machine boy should work to the end of his shift instead of being allowed to please himself as to how much more than a certain amount of work he will do. Efficiency in all classes of native work, whether piecework or day's pay work, depends greatly on the ability of the white ganger to organise his gang of boys and induce it to work industriously so that the manager's trouble in getting good native efficiency is dependent on his securing efficient white labour which, as has been pointed out, is at present very difficult to procure. Much improvement in costs for native work cannot be expected until a better class of ganger is obtainable or until

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some other form of close individual supervision of the native worker is in general use, such for example, as the further development of the native leading-hand system. Managers and engineers have been striving for years to devise machines and schemes for improving native efficiency, but, excepting that the jackhammer is perhaps more largely used now than in the past, I cannot see that much headway has been made in this direction during the past year.

HIGH WORKING COSTS.

The cost of materials and stores generally form far and away the chief cause of higher costs, and the cost in stores of recovering the gold contents of a ton of ore has probably increased by 2/6 as compared with pre-war days. This alone calls for the increase in the grade of a mine of .6 dwt., meaning that with increases in labour costs the mines working before the war with a bare margin of profit have had to raise the grade of the ore they milled by 20 to 25 per cent. in order that their margin of profit may be maintained. Results have shown that many mines have not been able to do this and have consequently worked at a loss instead of a profit. It must also be remembered that even those mines which have maintained their profit per ton, and those, too, which have struggled on making a reduced profit, have done so at the expense of their higher grade ore, meaning a less average profit per ton on their original ore reserve tonnages, in the future, even if costs returned to previous figures. To technical men such as mine managers and consulting engineers this position is well understood, but I doubt whether the non-technical majority of the whole community of the Rand which is entirely dependent upon the profitable working of the mines, understands fully the difficulties of working and the depreciation that a mine suffers from when costs of producing the gold increase as they have done during the past few years. I think everybody should be made to realise that a mine suffers from heavy expenses much more than is often reflected by its monthly profits. While on the subject of working costs, I cannot refrain from expressing gratification that the fallacy of comparing the costs of one mine with those of another has been recognised, as in days gone by there was nothing more unfair or annoying to a manager than to be asked why his costs were higher than those of another mine, which probably had better breaking ground, much shorter distances to train, less stope shovelling, much less water to pump, less waste to sort, less depth to hoist from, and so on, and I think it shows that those whose work it is to criticise these matters understand better the intricacies of mine management, and are in closer touch with them than used to be the case in the past. I think you will agree that mine managers are grateful for the resources which engineers and mechanics have shown in contriving makeshifts and using up scrap, which is now getting scarcer, during these difficult times, and the Central Buying Committee are to be congratulated upon the able way in which it has obtained and distributed the requirements of the mines.

TWO SERIOUS ACCIDENTS.

Two serious accidents occurred during last year, both of which were skip accidents. One was at the Meyer and Charlton Mine, when 21 white men were killed, and the other at the East Rand Proprietary Mines, where 19 natives were killed and 22 injured. These accidents cast their gloom over the mining community, and reminded us of the dangers and risks that the underground worker has to take in the ordinary course of his daily work, in spite of the constant care and precautions taken by the mine officials in their persistent watchfulness against danger to the lives of the men under their care. It is, however, satisfactory to be able to say that notwithstanding the heavy death-roll from the two individual accidents above referred to, and the yearly increasing depth of mining and area of worked out ground in the older mines, the accident death-rate for the Witwatersrand mines for the past year is lower than that for the previous one, the figures being: For 1918, 2.55 per thousand, as compared with 2.65 for 1917. This must be looked upon as a cause for congratulation to those responsible and of encouragement to anyone to keep on striving for further improvements in this direction.

SILICOTIC EMPLOYMENT OFFICE.

The Silicotic Employment Office, which is run by the association, continues to do good work, and Mr. Denny has to be commended for the able services he has rendered in connection with this branch of the office. The figures show that the number of applications for the year was 520, or 151 less than for the previous year. Suitable billets are mostly filled up, and it is becoming more difficult to find employment for these men. Judging from a report made by our secretary, Mr. Jago, who visited the Hendrikspan farm settlement during the past year, there is every promise of it proving a success, and it is hoped that the Miners' Phthisis Board will be able to extend the scheme which offers such ideal employment for silicotic sufferers. Everything is being done by the Association, with the support of the Chamber of Mines, to help in finding employment for silicotic men, and the Miners' Phthisis Board continues its co-operation in the matter. For some years past the expenditure in connection with the association has exceeded the revenue, and last year was no exception, the expenditure exceeding the revenue by £152 15s. 11d. You will see by the report before you that the subscription has now been raised by an alteration to the rules made in accordance with the constitution. The membership of the association shows a decrease, compared with 1917, of seven ordinary members, and an increase of two associate members. The attendance at meetings has been fairly good, though in this connection there is still room for improvement. I think I may say, however, that members are taking a keen interest in the work of the Association, and that the establishment of district committees as mentioned in the report of your Council will do a great deal of good.

THE ASSOCIATION.

Regarding the association generally, I am of opinion that it is not sufficiently an association for the mutual benefit of managers as a class, for while I think that the work undertaken by it is most useful to managers as well as to the industry, I feel that there is a very real need for the former to combine for their mutual protection against unfair treatment. To become a mine manager requires years of apprenticeship and hard work, culminating, in this country, in a stiff examination to obtain the Government certificate, without which no one may practice as a mine manager, just as no one may practice as a doctor or a lawyer without having first obtained the necessary diplomas. This puts the mine manager's calling on a par with the other professions which have their societies for mutual protection and for maintaining the status of their profession, and I say, why, after having won the qualification of a mine manager, do we not as a body combine to protect what we have won and to maintain the status of our calling?

Our Association has suffered a great loss by the death of Mr. Palmer Carter, who was a past president and one of our oldest members. He served on the council for many years, and was honorary treasurer for the last five or six years. We also have to record with regret the deaths of Mr. W. W. Lawrie, the manager of the Nourse Mines, and of Mr. E. G. Sudlow, of the Government Areas, both well-known members of the Association. I would like to express my regret that circumstances have prevented me from personally attending to the work of the Association during the last three months owing to my absence from Johannesburg, and to express my gratitude to your vice-president, Mr. Walton, and Mr. Jago, your secretary. I now beg to move the adoption of the report and accounts for the year which has just closed.

SIR H. ROSS SKINNER.

Sir Harry Ross Skinner said that before the war the burden of responsibility on mine managers' shoulders was a gradually increasing one. He thought that during the four years and a half of war the increase might be described as an avalanche of added responsibility. It was really remarkable to him how the scale of operations on the various mines had been maintained, and at the same time that steps were able to be taken to improve working conditions and to make good progress in that direction. He was sure that was due to the hard work of the mine manager who, in a wonderful way, had surmounted the various problems that had faced him in quick succession. The President paid a

well-deserved tribute to the mechanical engineers on the mines for the resourcefulness they had shown in meeting contingencies and for the wonderful things they had evolved out of scrap. He was sorry to hear from the President that the scrap heap was getting a thing of the past. He was hoping it would be a permanent institution. With the coming of peace they all hoped to be relieved from many of the restrictions under which they had been working. It was to the efforts of the mine managers that they had to look for that reduction in costs, through which alone he believed expansion of the industry would be possible and employment provided for the many men who were and would be knocking at the doors. Such reduction of costs and consequent expansion was really dependent on two important conditions. The first was a substantial increase of their existing native labour supply, and the second was the cordial co-operation for a common object between all the workers on the mines, employers and employed alike. Both sides had got to realise their responsibilities to the community and to endeavour to appreciate the one the other's view and if such relationship could be brought about he was sure the object aimed at would be attained. A prosperous Witwatersrand that could carry a large settled population was clearly dependent on mining activity and mining activity was as clearly dependent on a good supply of native labour. One found it difficult to understand why the people of the Rand did not take practical steps to impress upon the Union Government through their Parliamentary representatives or by other means the necessity of doing everything possible to help the industry by increasing the native labour supply, pointing out the precarious position of the industry to-day and the serious results likely to follow if it was allowed to go back any further.

WORKING CONDITIONS AND EFFICIENCY.

The President mentioned what was recognised by all the members that the best work followed on adequate service and good working conditions. The employer must realise that primary fact and the worker must assist him by showing that the cheapest work was efficient work well paid for and carried out in the best conditions possible. His idea was that the surest way to obtain the best work was to make the worker realise he was a link in the chain securing efficient work and successful administration.

SIR EVELYN WALLERS.

Sir Evelyn Wallers said he took the opportunity of attending their annual meeting to express appreciation, a very real appreciation, on behalf of the industry of the work that they had done in a very troublesome year, a year of very difficult conditions. He should like also to add his lively sense of personal gratitude for the loyalty and hopefulness of the managers on these fields in meeting problems and overcoming them. Some of the problems he might have assisted in creating for them. We have all often said, he

continued, that the recent great events have made the world safe for democracy. We have often repeated that, and it is true, I think, the next problem to which we have to apply ourselves is, as has been said, to make democracy safe for the world. That to-day looks like being the problem to which workers, whether they be employers or employed, will have to devote a very great deal of attention. The policy, as I have indicated to you before, that we have together carried on is, I am sure, the only one. There is no alternative. There are only a few people to-day amongst the employing section, who say that they wish the Chamber of Mines would show a little more strength, not be quite so weak, and constantly giving something, and similarly there are amongst the employed equally thoughtless people who think that the employer is desirous to grind the face of the poor. I think that there are few of us to-day amongst the employing section who hold the view I have expressed. There are few to say that a really firm attitude is right. We know those firm people.

CONDITIONS ON A RIGHT BASIS.

Personally, the view I take, and which I am sure you share, is that we have to put the questions of wages, hours, holidays, working conditions and living conditions on a basis that is right, not because it is expedient, but because it is right, and, having done that, you are on clean, clear ground. When the necessity for that firmness which is sometimes discussed and reaches me occasionally in rumours becomes necessary, you want to be on thoroughly clear, clean ground. On the other hand, there is a tendency to-day to be a little extreme amongst the employed, but I am perfectly sure that that extreme section is a small but noisy one. I am convinced, as I have said before many times, that the body of opinion that consists of the workmen on these fields is at heart perfectly sound—indeed, it may be described almost as conservative in this country; and the extreme section that you sometimes hear of and read of who have a tendency to kick over the traces and disregard the views of their leaders is a very small one, but, as frequently happens, a noisy one. When these unfortunate occasions have arisen—and they have arisen very often where Boards of Reference have been necessary—it has, unfortunately, been a habit sometimes to strike first and to appeal to a Board of Reference afterwards. That habit, I think, is dead, and I am sure all these things will die shortly.

INFINITE PATIENCE.

The essential requisite for all of us who have to deal with these things is infinite patience, and that applies to employed as well as to employer. Working people as a whole have only recently become fully organised, and whether it be employer or employed there is sometimes a tendency when the organisation is new for the sense of power to outrun the sense of responsibility. Therefore I say the requisite we must possess—and I am sure you will agree it is the requisite you have to possess—is infinite patience, and if we are, as we are sometimes described, leaders of industry, captains of industry, then we have to take the responsibility, we have to realise our particular responsibility is greater, and we have to realise that in the industry, as in government, the leaders must take the lead, and not be pushed.

Mr. J. J. Wessels was elected President, and Mr. A. E. Payne Vice-President. The following were elected to the Council: Messrs. J. E. Healey, A. J. Walton, J. R. Thom, C. Glyn, G. H. Beatty, and G. G. Holmes.

West Springs.

The secretary writes:—The following is a copy of a cable which has to-day (February 24) been despatched to this company's London office: "No. 1 Shaft.—A slip of ground took place yesterday, causing the east side of the shaft to cave. There were no casualties. The engineers are now investigating the position. Will cable you further as soon as possible."

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A NATAL ASBESTOS FLOTATION.

Deposits of tremolite of excellent quality and in considerable quantities have been found in the Dundee district of Natal and are being worked by the Buffalo Asbestos Company. On analysis it has shown itself to be true asbestos and very refractory to treat, resisting a temperature of 2,250 degrees Fahr. The fibre is of very fine quality and specially suitable for steam packing and for being worked up into lagging for boiler and steam pipe covering, etc. The company also manufacture a patented asbestos jointing paste called "Baco," which is extensively used.

Unlike the mistake made by several local industries in the past, the company did not place their goods on the market before they had been thoroughly tested and proved. Their products are now being extensively used, and are considered by the best authorities as quite equal to the best imported. Thus South Africa is rendered independent of outside countries for asbestos, and users will be assisting the growing economical independence of the country by giving the local industry their whole-hearted support.

We are informed that, in addition to the tremolite deposits, the company holds large claims of chrysotile deposits. These are situated within 15 miles of the railway. Chrysotile asbestos, principally on account of its higher tensile strength, is used in the manufacture of a very large variety of goods, including asbestos filter cloth, rubber cloth, felt, roofing felt, fireproof drop curtains, garments, asbestos asphalt, compositions for electrical insulations, paper and corrugated paper, millboard, building sheets, slates and tiles, asbestos rope, fireproof paints, and many other goods, and the longer fibres are used for giving weight to silk.

Although the company hopes to utilise their own products as much as possible by establishing further industries in Natal, it is not possible at the present stage of development of this country to absorb the whole of the output from the

chrysotile, and for the time being most of it will be shipped abroad, where there is an increasing demand. In order to exploit these deposits, and also meet the growing demand for the products from the tremolite by increasing the present output, the company, which is privately owned and run on a sound conservative basis, has decided to go to flotation under the new name of the Natal Asbestos Company, Ltd., with head offices in Durban. Most of the capital is, we understand, being subscribed privately.

The African Banking Corporation's report shows a gross profit for the year of £378,988. A dividend of 8 per cent. has been declared, £40,000 has been placed to reserve, and £36,013 has been carried forward.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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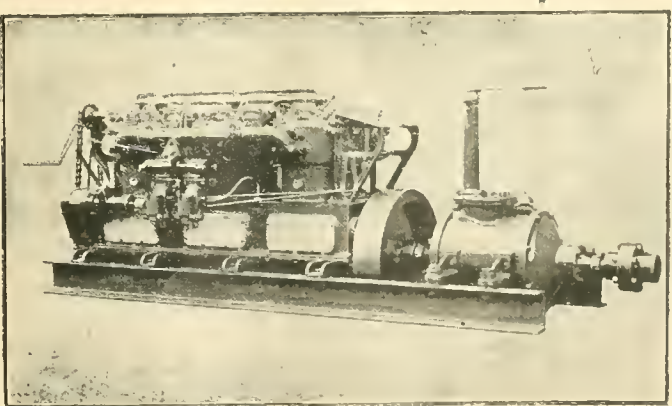
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THE ECONOMIC GEOLOGY OF THE BELFAST DISTRICT.

Gold, Coal and Asbestos.

WE have received from the Geological Survey Sheet No. 16 showing the geology of the Belfast district, with an explanation written by Mr. A. L. Hall, who surveyed more than two-thirds of the area during the years 1905 and 1911-13. Dr. Mellor mapped the rocks of the Waterberg System in the western part of the area in 1906, and the account of those beds has been compiled from his description. Dr. Humphrey is responsible for the survey of the country between Belfast and Machadodorp. The sheet represents an interesting part of the Transvaal, and is an important instalment of the geological map of the Province. It includes portions of the high veld, middle veld, and bushveld, and consists chiefly of the Transvaal and Waterberg Systems, with a small area of older granite and representatives of the bushveld intrusions; there are also large outliers of the Karroo System. The greater part of the asbestos fields of Carolina fall within the sheet; coal has been mined near Belfast and Palmer's Siding; and gold has been obtained on Gevonden.

ECONOMIC DEPOSITS.

We take the following from the explanations:—No occurrences of first-rate economic importance have so far been discovered within the limits of Sheet No. 16. In the basin of the Komati River two gold occurrences have been located, and a third lies south-east of Onder Station, while asbestos has been worked near the south-eastern corner of the sheet. Coal occurs at several localities over the western portion of the country.

(a) *Gold*.—On the farm Gevonden No. 178, situated some ten miles east of Bonnefoi Station, in the valley of the Komati River, occurs a well-defined dyke on the south bank of the river. This dyke has a width of some 200 feet and runs approximately from south-west to north-east, cutting more or less vertically across shales, intrusive diabase sheets and quartzites of the Daspoort horizon. Owing to the more rapid erosion, the course of the dyke coincides with a well-defined steep gully, along the slopes of which the workings are situated. The latter have now ceased for several years, so that only surface examination is possible. The ore is a complex one and contains gold, silver and copper, the latter being very prominent in hand-specimens by abundant azurite and malachite. Near the north side of the dyke a large white quartz vein, some 7 feet wide, is included, and associated on the south side with several veins of a complex ore. An analysis of this ore gave the following results*:—Fine gold, 9.32 dwt. per ton of 2,240 lb.; fine silver, 4 oz. 4 dwt. per ton of 2,240 lb.; copper, 14.6 per cent. The close association of the ore with the dyke, which can be traced for a considerable distance along the strike, suggests a genetic connection, but it was not possible from the indications now available to say whether the deposit represents merely a rich pocket or a defined reef, continuous both in depth and along the strike.

On the farm Welgelegen No. 33 an auriferous deposit was located in 1908. This farm is intersected by the Carolina-Machadodorp main road, the gold occurrence lying about five miles north-west of Bonnefoi Station and a little east of the main road, in shales of the Pretoria series associated with intrusive diabasic rocks. Some prospecting trenches in the igneous rock disclosed a vertical quartz vein up to a foot in width, associated with several small stringers, and carrying a compound ore of gold, silver and copper. No work appears to have been done on this property since 1908.

The third gold occurrence is situated on the farm Weltevreden No. 17, about three-quarters of a mile from the centre of its western boundary. The deposit here consists of an inclined quartzose reef occurring in the diabase between the Dwaal Heuvel and Daspoort quartzites. The "reef" forms a quartzose ferruginous band, inclined at about 60 degrees

to the south, with an average width of approximately 6 feet, composed of dirty whitish grey quartzitic quartz with irregular limonite partings, traceable along a north-easterly course for about a quarter of a mile and opened up at several places by parallel trenches. Near the western end of the "reef," on the right bank of a small tributary flowing northwards, are the remains of an old battery. This deposit was apparently worked many years ago, but no definite information of its past economic history could be obtained.

(b) *Asbestos*.—The occurrence of asbestos (chrysotile) in the neighbourhood of Carolina has been known for some time, and mining operations in this connection were carried on about eight years ago on Diepgezet No. 33 and the adjoining farms. The deposit of chrysotile—asbestos—occurs on the farms Diepgezet No. 33, Goedverwacht No. 32 and Rietfontein No. 70, adjoining one another and situated in a direct line some fifteen miles east of Carolina, which is the nearest railway station. The district is accessible by a fairly good but somewhat circuitous road. The distance by the road from Carolina to the Diepgezet workings, which were started again in December, 1913, is about twenty-two miles. The asbestos country forms high mountainous ground belonging topographically to the Drakensberg Range, and is deeply dissected by steep valleys and kloofs, as part of the drainage basin of the Buffels and Zeekoe Spruits. The approximate elevation of the workings on Diepgezet is 5,100 feet about sea level. The water supply and the climate are good.

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* November, 1908. Monthly Report of Inspector of Mines.

The mineral invariably occurs in thin seams, running parallel to the bedding planes, and more conspicuous in the lower portions near the top of the igneous rock. At the actual contact plane no asbestos occurs. The rock containing the asbestos is a very compact, somewhat brittle, delicate pale greenish white altered dolomitic rock, usually very massive or thickly bedded. It is very finely veined along the bedding planes and locally varied by delicate shadowy streaks of darker greenish zones. Often the dolomite above an asbestos vein is pale greenish, while below the vein it darkens distinctly and becomes brown in colour. Sometimes the pale green rock passes along certain layers into light greenish bands.

(c) Coal has been found at several widely distributed localities west of Belfast, though little appears so far to have been done towards proving its quality and extent. Several small pits and adits are met with, which supply the local needs of the population, a point of importance, to a distinct base of wood as the high veld. An interesting deposit of coal occurs on the farm Swaartkoppies No. 234, where it has been worked for some years. It is situated 14 miles due north of Belfast and about one and a half miles north-west of Palmer's Siding on the Dullstroom Railway, with which it is connected by a light railway. The workings are situated about 6,600 feet above sea level and lie in a wide open valley-like flat, surrounded by low kopjes and ridges, in the north-central portion of the farm. The coal-bearing sandstones are surrounded and underlain by dwyka conglomerate, well seen to the south-south-west of the mine on the road to Vlakplaats No. 912, also on a low kopje, over which runs the northern boundary of the farm. The workings are entirely open-cast and form a large wide pit, in which coal of good quality is exposed in a continuous section for about 14 feet from the surface. Trial investigations have proved the presence of 4 feet of fireclay underlying the coal, while the latter was again found below the fireclay. A little to the north-north-east of the mine is a low hill, composed of very remarkable rocks. The surface is strewn with irregular blocks of material having a close general resemblance to clinker, occasionally bedded, but often broken across, displaced, twisted and generally much disturbed. Some of the layers consist of whitish very fine-grained indurated shaly sandstone or almost compact sandy shale, which are highly jointed and resemble porcellanite or china stone in consistency. There is little doubt that such rocks are the result of simple caustic action due to heating, perhaps the result of mild thermal metamorphism—fritted sandstones. In an open pit on the south side of the hill a thickness of some 12 feet is exposed of this type, some varieties assuming a pale dirty bluish colouration, others showing irregular scattered masses of black ferruginous matter. It seems as if the whole complex underwent slow and incomplete combustion underground, in the course of which most of the carbonaceous bituminous matter was expelled, leaving a black cellular clinker, now closely and quite irregularly mixed up with fritted shales and sandstones. Probably the disturbed nature of the beds is at least partly due to the expansive force of the gases generated during the process of incomplete combustion.

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

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CORRESPONDENCE AND DISCUSSION.

Jackhammers: A Suggestion.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—As a practical machine man I have read with great interest the article on Jackhammers which appeared in your issue of February 15. I should like to add my humble endorsement to your view that the time is ripe for another stope drill or rather hammer drill competition. My suggestion is this, Sir, that same should be held in conjunction with the great Witwatersrand Agricultural Show, which is to be held in Johannesburg in April. All South Africa and his wife will be there, and although a Jackhammer isn't an agricultural implement, mining and agriculture are two sister and interdependent industries in this country, and a drilling contest shouldn't be amiss. It would at any rate prove a big draw for the Reef.—Yours, etc.,

“STARTER.”

Springs Mines,
February 23, 1919.

[We are afraid that a demonstration or competition such as that suggested by our correspondent would not be of any great industrial value, as the period of the show is too limited to reflect the real merits and performances of the various types of Jackhammers now on the market. From the spectacular, instructive and attractive points of view, however, there is, we think, a good deal in “Starter's” suggestion to recommend it to the Agricultural Society's Committee. Doubtless the committee responsible for the forthcoming mining machinery exhibition will also consider the suggestion.—Ed., *S.A.M. & E.J.*]

Swaziland Tin.

The following are the results of the operations of this company for the month of January: Concentrates recovered, 32,677 long tons; estimated profit (taking tin at £200 per ton), £436; adjustment in respect of previous shipments, £424; estimated profit for the month, £12.

Australia's War Profits Tax.

With an announcement by the Federal Treasurer (Mr. Watt) that it had been decided to terminate the operation of the War-time Profits Tax on June 30, 1919, opposition to the Bill to extend the existing Act subsided in the House of Representatives (states the *Melbourne Argus*). An amendment to embody this in the Bill would, he added, be introduced in the Senate. Amendments by Mr. West (Cau., N.S.W.) and Mr. Higgs (Cau., Q.) to alter the accounting period in certain circumstances had previously been disagreed with. After the third reading of the Bill had been agreed to, Mr. Watt, on behalf of the Ministry, thanked members on both sides of the House for the manner in which they had helped him to pass the Bill.

Antelope Gold Mine: Half-Yearly Report.

The half-yearly report of the Antelope Gold Mine (Rhodesia) for the period ended September 30, 1918, illustrates the uncertainties of mining, an unexpected granite intrusion in the best grade stope having caused difficulty in maintaining a payable milling grade, so that the hope of immediate improvement under existing conditions cannot be considered promising. The prospects for the future now depend upon the eastern section, as well as the possibility of higher grade ore being opened up below the fourteenth level. Since the above date, operations have been seriously impeded by the outbreak of influenza, and for a period the plant had to be entirely closed down. The situation is now improving, but it will be some time before normal conditions prevail. Losses on working were expected to continue until the end of December last, after which date it was hoped that moderate profits would again be made. The experiences of the Antelope Mine as regards the influenza epidemic have also been those of most other mines in Rhodesia.

ENGINEERING SECTION.

SOUTH AFRICAN MUNICIPAL ELECTRICAL ENGINEERS' CONGRESS.

Third Annual Gathering held at Port Elizabeth—President's Valedictory Address.

THE third annual Convention of the Association of Municipal Electrical Engineers was opened in the City Hall, Port Elizabeth, on the 10th inst. The gathering was welcomed by the Mayor of the City, Mr. Henry Forbes, and accompanying him were the Town Clerk and Treasurer, the Deputy Mayor, Mr. J. S. Young; the Chairman of the local Electricity Committee, Mr. Smith Hudson; the City Engineer, Mr. S. J. Kelly; Mr. B. Sankey, the Port Elizabeth Electrical Engineer, vice-president and president-elect of the Association. Others who were present were: (members) Messrs. T. Millar, Harrismith; T. Jagger, Ladysmith; W. Bellad-Ellis, Queenstown; P. H. Newcombe, Aliwal North; C. J. Everitt, Johannesburg; W. A. Hodge, Winburg; G. Mercier, Bethal, Transvaal; H. Brittle, Cradock; W. Munro, Maritzburg; J. Vowles, Kingwilliamstown; R. D. Coulthard, Oudsthoorn; G. A. Stewart, Bloemfontein; E. Poole (honorary secretary and treasurer), Durban; (delegates), E. Fairclough, Ladysmith; D. A. Thomson, Mayor of Bloemfontein; J. Crawford, Bloemfontein; J. de Jager, Oudsthoorn; and H. W. Doull, Maritzburg. The President of the Association, Mr. J. Roberts, of Durban, was unavoidably absent, and Mr. Stewart was elected to take the chair in his place. In his valedictory address, which was read by Mr. Stewart, the retiring President referred to the feature of the past year as being the attempt to carry on under difficulties and generally to make bricks without straw. "For instance," he said, "we in the Durban Electrical Department hadn't much notion till a few months ago of how an old tram metal would do or how it would look when used as a pole for electric wires. We now find that a rail under 7 inches deep and weighing about 85lbs. to the yard will stand up quite all right 33 feet out of the ground and at a little distance away can scarcely be distinguished from a round pole, and so on." Economy in every direction had been necessary, and the practice of it had given electrical engineers some valuable experience and some useful lessons. Referring to the future, he said: "And the need for economy and the use of unusual expedients has not by any means terminated with the close of the recent great war. Cost of materials in many cases will fall but never, I believe, to their old pre-war standard. A forecast that, on the average, prices will be at least 50 per cent. higher than the old figures, errs perhaps on the side of moderation, so that a power plant which in the old days might be put down for £12 a kilowatt will in future cost nearly £20. That in itself will bring about a recasting of values. In the case of boilers which at the present time are more than twice the cost of the same thing before the war, the question will arise 'does it pay to try and get the same efficiency as heretofore? Especially does this economic consideration present itself when it is remembered that by far the greatest proportion of the work is done in the first half of the boiler, the transference of heat from the gases to the water with an outlet temperature of gases of say 300 degrees F. is very small per cent. area compared with what takes place where the gases first pass through the tubes. The tendency will undoubtedly be therefore to push up outputs of boilers by increasing the grate areas and draught pressures to perhaps double what we have been accustomed to look upon as an economical rating."

The problem, as stated very concisely but convincingly by Mr. Roberts, resolves itself into a calculation of the resultant saving to be gained by getting the utmost possible out of boilers, turbines, condensers, transformers, mains, motors and the rest compared with the disadvantages which may follow in one way or another from this process of speeding up the plant. There are two points to be considered, however: "Not only will machinery be greatly more expensive but capital will not be borrowed at $4\frac{1}{2}$ per cent. interest any more. We shall have to pay 6 per cent. for municipal loans while Governments are tempting investors with 5 per cent. stock free of income tax. That means a great difference. For instance, in the case of the boiler I just mentioned. It used to cost £5,500 bought with money we borrowed at $4\frac{1}{2}$ per cent., costing £247 per annum interest. It will cost us in future £12,500 at $5\frac{1}{2}$ per cent. to 6 per cent.—£687 per annum. Further comment on the need for utilising that boiler to the full is, I think, unnecessary."

Mr. Roberts concluded his interesting address by referring in sympathetic terms to the labour problem which looms so largely upon the public vision at the moment. On the election of officers Mr. Sankey, of Port Elizabeth, was chosen to be president for the ensuing year. Mr. E. Poole was re-elected to the dual capacity of hon. secretary and treasurer, and Messrs. Munro, Natal; E. T. Price, Transvaal; Bellad-Ellis, Cape; and Stewart, O.F.S., were elected members of the Council. Subsequently Mr. Woolley-Dod was elected vice-president, and Pretoria was decided upon as the locality for the next annual convention. Among the points discussed later on was that of asking municipalities to make an annual contribution to the funds of the Association, and a resolution to that effect was passed. Among other matters referred to were standardisation, upon which it was resolved to ask the Standardisation Committee of South Africa to expedite a report; upon a uniform system of Government control of loans and expenditure in connection with electrical undertakings; the salaries of small station engineers; prime movers for small stations, and automatic voltage regulators and batteries.

The report of the sub-committee on proposed wiring rules and regulations was to have been presented next, but it was explained by Mr. Stewart, one of the members, that, owing to the absence of Mr. Woolley-Dod, it had been impossible to complete their task.

An important proposal by Mr. Roberts, as follows, was considered and agreed to: "(1) That the Constitution of the Association be altered to include all engineers in responsible posts in municipal service. (2) That the title of the Association be altered accordingly. (3) That sections of the new Association be formed: (a) Electrical and Mechanical Engineering; (b) Civil Engineering; (c) Sanitary Engineering. (4) That the annual conferences of all the sections be held at the same time and place. (5) That the secretary be asked to obtain the views of members of the present Association not later than six months from date, and thereupon to submit a report on the proposal at the next Conference."

After the reading of a paper by Mr. E. Poole on statistical returns, a committee consisting of Messrs. Roberts, Munroe, Lambe, Val Davies and Poole was constituted to go into the matter, draw up desirable forms and communicate with the Government.

THE FUTURE OF BRITISH ENGINEERING.

Openings for New Enterprise—Valuable Advice to Manufacturers.

THE general impression conveyed by the report of the British Engineering Trades (New Industries) Committee is, that in many fields British engineering was, before the war more firmly established and more successful than is often supposed, though there are in nearly all directions openings for manufacturers with enterprise. The Committee, which was appointed by the Minister of Reconstruction in December, 1917, consisted of sixteen leading engineers and manufacturers, under the chairmanship of the Hon. H. D. McLaren, C.B.E., M.P., and was assisted by a panel of eleven trade unionists, under Sir Claud Schuster, to advise on labour questions likely to be raised. Mr. McLaren is, of course, a director of Bolckow Vaughan and Co., Palmer's Shipbuilding, Tredegar Iron and several other companies. Fifteen branch committees were formed to deal with individual sections of the trade, and summaries are given of their conclusions.

STANDARDISED SPECIALITIES.

The main Committee strongly recommends the more extensive adoption of specialisation and standardisation, particularly in the case of small manufacturers, who, it is considered, would do better to confine themselves to the manufacture of a few types of articles which they could then bring to greater perfection and produce more cheaply. The Committee thinks that such a departure, together with proper standardisation, would enable engineering operations to be carried out as "repetition work." This would not only cause many men, highly skilled and highly paid, to be employed in manufacturing the necessary tools and jigs, but would also create an opening for the employment at good wages of a number of unskilled and semi-skilled operatives, both male and female, and wounded soldiers.

The Committee recommends that in future all Government designs and specifications should be considered in co-operation with experts in workshop methods of production. In the absence of special circumstances, Government Departments and public authorities should order standard goods of British manufacture, and in cases where there is no question of ordering standard design they should have in view the encouragement of the production of articles of new and improved types or of experimental design.

WAGES AND FOREIGN COMPETITION.

The Committee recommends that new industry should not be introduced into this country unless the wages paid to those employed in it are such as to ensure an adequate

standard of living and unless machinery exists or can be set up for regulating rates of wages and hours of labour; further, that no industry be introduced under conditions involving any special liability on the part of those engaged in it to industrial disease. Incidentally, light is thrown upon the restrictive effects of legislation in the past upon the development of British industries and upon other conditions, such as the incidence of taxation, dumping, etc., which, in the opinion of those engaged in engineering, stand in need of reform.

The report of the Branch Committee on Agricultural Machinery states that this industry was on the whole in a fairly satisfactory condition before the war, though there is room for considerable development both in home and export trade. The Committee draws a special notice to the motor tractor industry, which is more highly developed in the United States than in this country. Several British firms were devoting attention to this production before the war, but Government demands upon them for munitions greatly retarded the development of the industry. The result of the importations by the Government and private firms of American tractors on an immense scale is watched with some anxiety. Many firms are preparing to manufacture them and they will be produced here in large quantities as soon as the necessary raw materials and labour are available. In view, however, of the advantageous start given to the imported article, due largely to Government action, it is very important that every facility and encouragement should be given to British makers at the earliest possible moment. Among the agricultural articles the manufacture of which

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could in the Committee's opinion be greatly developed, are cream separators, swath turners, hay loaders, disc harrows and corn and seed drills.

The Branch Committee on Hollowware, Sheet Metal and Pressed Work considers that only a small percentage of highly skilled labour is required in this branch of industry, mainly for tool making and repairing. Of the remaining labour, having regard to the amount of physical strength and mechanical aptitude required, women to the extent of about 50 per cent. could be employed. Among the many articles dealt with by this Committee are sewing machines and typewriters. Large firms are known to be taking up the manufacture of the former, and it is believed that they will be adequately manufactured in this country, but there is room for considerable development in the manufacture of typewriters.

The branch committee on electrical apparatus and machinery considers that, as regards most of the articles under consideration, ample manufacturing facilities exist, and in many cases did exist before the war, for meeting the whole requirements of the United Kingdom and the Colonies, and, in certain cases, for meeting the export trade to other countries, but that these facilities were not fully employed owing to the importation of articles from abroad. The report lays stress upon the necessity for ensuring the continuance of the manufacture of carbons and includes a special report as an appendix which points out that had it not been for the action of one firm in continuing to make arc lamp carbons at very considerable loss, the country would have had considerable difficulty in meeting the demands for searchlight carbons. With regard to magnetos, now adequately made in England, the Committee recommends that German magnetos should be excluded for a period after the war, except under license, and that a duty should be imposed on all imported magnetos.

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The Branch Committee on Scientific Apparatus points out that the scientific apparatus industries are vital to the nation during peace and war. No country can remain for long in the front rank industrially if it depends upon others for its scientific apparatus, because such apparatus is generally produced where science is most actively applied in industry. The Committee gives a long list of articles not adequately manufactured in Great Britain, in regard to which there is room for new industries. One such industry is the manufacture of clocks and watches on a large scale. The Committee considers the establishment of such an industry of very considerable importance. In Switzerland, Germany and the United States these manufactures, turned out in large quantities and cheaply, constitute the chief training ground for skilled mechanics accustomed to work of the highest precision and finish. In Great Britain, which has no such training ground, the scientific apparatus industry suffers from lack of skilled help and manufacturing experience.

The Branch Committee on Aircraft Machinery is of opinion that owing to the enormous expansion of the industry during the war its output capacity will be greater than the demand for years to come, and advises that immediate steps should be taken by the Government to avoid the extinction of so essential an industry. Proposals to this end have been forwarded to the Government.

SPECIALISED TEXTILE MACHINERY.

Valuable technical information is contained in the reports presented by the Branch Committees on Textile Machinery. Generally speaking, textile machinery was adequately manufactured in Great Britain, but the articles taken up by the Branch Committees were textile machines of a highly specialised kind, in the making of which there seemed room for further development. Among the machinery dealt with is that required for calico printing, dyeing, hank mercerising, flannelette raising, gas mantle yarns, silk waste, lace and embroidery making, etc.

The Branch Committee on Machine Tools and Small Tools gives a list of machines which are not adequately made and in the making of which there is room for further development. Among these are mechanics' fine tools, portable electric tools, lathe and drill chucks, and many kinds of machine tools.

The Committee has agreed that bone-fide inquirers interested in the manufacture in Britain of any particular article may be put in touch with the Chairman of the Branch Committee concerned to obtain such information as is available to obtain at the Ministry of Reconstruction all the information made available by the Branch Committees, except that which is of a confidential nature.



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BIG S.A.R. ENGINEERING PROJECTS.

Millions to be Spent on Rolling Stock Renewals—Electrification "An Enormous Improvement"—Grain Elevators to Cost Nearly a Million.

In his Railway Budget speech in the Assembly last week, Mr. Burton, the Minister of Railways, made several points of interest to the engineering community. He declared that the Railway Renewals Fund was not in a flourishing condition. There would probably be a balance of £5,873,000 standing to its credit at the end of next month. But hon. members should not lose sight of the fact that the great bulk of that had been earmarked—actually committed already. He believed that members did not know, and he felt sure that the general public did not know, to what large extent they were bound to replace their stock to get the railways in proper condition of working. Therefore the fund had been committed to a very large extent, and whether that money was spent in the next six months, or in the next 12 months, or even in the next 18 months, they had to spend their money, simply because they had to get material. The position of the fund was that on the 31st of March, 1918, there was a credit balance of £5,354,137. The receipts during 1918-19 were £1,666,000, making a grand total of £7,020,137. During the year 1918-19 they had spent £1,147,000, so that the cash balance at the end of the present financial year would be £5,873,137. Against this balance there would be on March 31 commitments amounting to £5,666,000, so that they saw that the balance of the fund uncommitted at that date was only £207,137. There would be further commitments during the ensuing year for additional rolling stock, permanent way renewals, etc.

COAL REVENUE FIGURES.

With the exception of the revenue from coal and livestock, the revenue budgeted for showed an increase under all heads. The decrease of £131,800 in coal was due to the falling-off in the bunker traffic; and in livestock, to the quantity of livestock carried, the latter being due to the falling-off in military requirements. Last year's revenue estimate was £276,034 a week, but the total general revenue now budgeted for was £334,000 a week. This was, of course, a very much larger weekly estimate than any previous year, and was almost equal to the record weekly revenue of £342,279. This figure was exceeded during the week ended February 8, when the earnings were £342,177.

TOTAL MILEAGE AND STAFF.

The combined railway and harbour capital expenditure to December 31 last was £104,392,354. This included expenditure out of revenue amounting to over £18,000,000. We had all our new lines open—that was to say, that every line authorised by Parliament was now built. The total mileage owned and leased and open on December 31 last was 9,542 miles. The staff consisted, on December 31 last, including the staff in South-West Africa and construction and casual staff, of 69,984; that included 35,325 Europeans, 4,372 coloured, 2,568 Indians and 27,056 natives—a large army to deal with and to deal with successfully and happily.

CONDITION OF ROLLING STOCK.

A word about rolling stock. On January 25 last 27.33 per cent. of their engines were out of traffic. In December, 1917, 25 per cent., and December, 1915, 26 per cent. Out of a total of 1,592 effective engines, 435 were out of traffic. Repairs were hampered by shortage of staff, and the supply of fitters was not yet adequate, and it seemed doubtful whether the necessary mechanics were available in South Africa. Forty-nine fitters and two apprentices were still on active service, and, even if they returned, there would not be sufficient to cope with present requirements, and it seemed probable that they might be forced to obtain men from outside South Africa if the work was to be placed on a proper footing. Two hundred and forty-seven new engines were on order, and negotiations were proceeding for placing still further orders, and he hoped that the presence of the

General Manager of Railways in England would assist in expediting delivery of these. Fifteen per cent. of their coaching stock and 5½ per cent. of their wagon stock were out of repair. They had ordered 423 new coaches and vans and 3,997 trucks, and they expected to have a fairly heavy delivery of those articles within the next few months. A very considerable number of those coaches and wagons would be built in South Africa. While under present circumstances they could not expect that their stock would be in the same running order as before the war, still there was no cause for anxiety in regard to their conditions as to safety.

ELECTRIFICATION AND GRAIN ELEVATORS.

With regard to electrification, for some time past they had been considering the advisability of electrifying the more congested portions of the railway, and a prominent firm of consulting electrical engineers had been examining the position, and they are now busy preparing a report, and when it is presented the whole position would be gone into. If some of their railways were electrified it would probably be an enormous improvement on the existing state of affairs.

With regard to grain elevators, a committee was appointed in January, 1918, to inquire into the desirability of having elevators, and presented a report in July which unanimously recommended that elevators should be established at certain places in the country. The total scheme would involve an expenditure of £956,000. An expert consulting engineer connected with one of the largest firms in the world had been appointed to go into this question, and would probably arrive in about a month's time.

STANDARD BANK OF SOUTH AFRICA, LTD.

SUBSCRIBED CAPITAL
£6,194,100

PAID-UP CAPITAL
£1,548,525

RESERVE FUND
£2,000,000

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Builders' Strike—Perspective View of South Africa's Prosperity—Timber Yards and Prospects—Concrete Pipe Industry—Explosives—Electrical Matters—Oils, Colours and Glass—Second-hand Material and Machinery.

THE strike is interfering with business, therefore must be mentioned in these trade notes. During the first part of the strike it can be fairly stated that when it was pretty well understood that the matter would go to arbitration under the aegis of the Chief Magistrate, public opinion was on the side of the employees. But to-day the public are not pleased that the men are so adamant and will not meet the masters in arbitration or in some other way. The unfortunate part of this deadlock is that it brings out the darker side of human nature, and each side is beginning to say and do unkind things. Level-headed men on either side must tackle the subject in as fair a spirit as the circumstances and the excitement already engendered will allow. Strikes can well be likened to poison, which the Legislature provides must be handled by qualified men. Now strikes should be just as carefully handled and should only be brought into requisition when all and every constitutional method has been well and truly tried. After many years of agitation the Government has recognised the Postal and Telegraph Association, and yet there was no strike, although the temptation for such at times must have been very great and tantalising, especially to the young bloods. It is to be hoped that common sense will prevail, as there is so much work to be done.

PERSPECTIVE VIEW OF SOUTH AFRICA'S PROSPERITY.

The next paragraph is more pleasing, as the outside world is patting us on the back.

According to a *Star* cable from London, in the banking supplement of the *Financial Times*, where three columns are devoted to the "Progress of the Union," there appears a retrospect of the general economic conditions in South Africa during the past year, which must afford the liveliest satisfaction to all having an interest in the Union's welfare. It may be doubtful whether any country at the present moment can, comparatively speaking, make a much more favourable showing in its balance sheet than the Union. This is very cheering news with all the elements of discord coming from all parts of the world—even including our own favoured spot. The unfortunate strikes are now taken as a matter of course, and we never get any adverse comments from overseas as regards South Africa and all its prosperity.

TIMBER, ROOFING IRON AND BRICKS.

The timber yards people did not think the strike would have been of long duration, therefore in the earlier period they contented themselves with supplying from stock. But now most of them are arranging to supply their customers more particularly the country ones from the coast ports where they have saw mills or can arrange the cutting. A sawmill in Johannesburg, run by the proprietors—father and son—was shut down by the strike committee on Wednesday. The price of deals is 1s. 8d. all round; floorings, 9½d.; ceilings, 6½d.; beaver boards, 5½d.; galvanised roofing, 24 gauge, 1s. 6d. to 1s. 7½d., according to length. There was an idea that merchants were much overstocked with roofing iron, but that is not correct, therefore it is expected the values will remain steady. The cable news from Sweden is that although freight is reduced, the price of timber f.o.b. is advancing. The shipments leaving Christiana on March 1st will cut about level; that is, the

extra cost of timber will be set off by the lower freight. Both the Swedish and London shippers recommend purchasing for forward deliveries, as it is anticipated that values will advance. The firm supplying the information had rather profuse cables, but no details were given as to actual prices. The brick yards are practically at a standstill, the prices are unaltered. Lime is slightly dearer on account of extra railage, say about 10 per cent. Blue lime is 4s. 6d.; plaster, 5s. 6d.; unslaked, 7s. 6d.; slaked, 5s. 6d. per bag.

CONCRETE PIPES.

The Hume Pipe Company (S.A.), Ltd., are doubling the size of their premises and considerably increasing the machinery equipment. Machines for making pipes up to 5ft. diameter are now on the site and will be completed ready for running in two or three weeks, as the extensions to the buildings are practically completed. Contracts are being received for pipes up to 4ft. diameter. A contract for 1,500,000 ft. of piping for Ladysmith's water supply is practically completed. These pipes are being tested to 250lbs. per sq. inch pressure. Large contracts are in hand for Johannesburg Municipality, Springs Municipality and for many of the mines. The company are specialising in the manufacture of bends, elbows and all kinds of special fittings, made in reinforced concrete. Agents are now being appointed throughout the Union of South Africa and orders are coming in from all quarters. The company have several orders in hand at the present time to keep the extended works fully occupied for several months to come. Railway sidings are now being laid into the factory. A model native compound, to accommodate 100 natives, with the necessary offices has been completed; it is probably the most modern and sanitary native compound in the Union.

EXPLOSIVES.

The British Government control on glycerine has ceased, therefore supplies can be freely purchased in Johannesburg at 3s. 6d. to 4s. per lb., thus showing a loss of about 5s. per lb. on the best imported values before the armistice, since when naturally the demand fell off for munition pur-

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poses. Now that Shipping facilities are better the prices of explosives will, of course, gradually become easier, especially in the mine contracts. In connection with other supplies for explosives restrictions are practically removed. We understand that the gelignite substitute for standard gelignite, called gelignite "A" (the use of which in the mines appreciably affects the consumption of nitro-glycerine) is still continuing to give every satisfaction, which, of course, is all to the good.

ELECTRICAL GOODS.

There have been very few enquiries of late for large electrical apparatus to be imported on indent. Motors for operating centrifugal type mine pumps form, however, a rather important exception. Mining houses and municipalities are apparently postponing inquiries probably expecting an early reduction in costs. There are, however, no signs that such expectations will be realised because it could only arise from cheaper metals and labour. Metal prices are holding fairly steady and few can foresee any reduction of wages for a long time to come. Freight rates have, of course, come down considerably and may come down further in future, but as electrical apparatus costs per ton somewhere in the neighbourhood of two hundred pounds or more, freight has not a very important influence on cost. Enquiries for electrical supplies are rather scarce, and there is little difficulty in securing all requirements ex local stocks. Lamps are very plentiful and are offered at lower prices than a year or so ago. Second-hand electrical plant is offered in fair quantity, prices asked being often as high or higher than similar new plant can be quoted.

OILS, COLOURS AND GLASS.

Quotations are erratic, as one firm says 10s. and another 12s. 6d. for a certain line. However, things may become steadier as another trade list may be issued for March month. White lead is nominally 1s. lb., both wholesale and retail, but between merchant and merchant about 80s. per 100lb. The British embargo is off, therefore white lead may become more erratic in price. It is said there is sufficient white lead in South Africa to last a couple of years. Linseed oil is from 12s. 6d. to 14s. gall.; the Indian kind realising more than the South American. Turps is a little firmer at 70s. 2—4's and 75s. 10—1's. Petrol is 38s. 6d. to 39s. 2—4's. Cotton oil 125s. case, castor 75s. ordinary, and 100s. medicinal; olive 25s. to 27s. 6d. gall.; carbide £95 to £100 per short ton. Business is good from the country districts and not so bad from Johannesburg and Reef, as it seems that notwithstanding the strike a large number of people are purchasing freely of small general parcels or paint, etc., presumably to do the work themselves. There is very little doing in the plate, window and bevelled glass trade because of the strike. The manager in this particular department says that he expects extra good times when the strike is over, as there are many jobs on the eve of being finished and lacking the glass.

SECOND-HAND MATERIAL AND MACHINERY.

There is a steadier feeling in the machinery line more especially connected with agricultural requirements. Steam

and motor power is required for milling, pumps and farm-yard purposes. There are also more enquiries from coal mines and outside places for good high pressure boilers, hence for decent machinery values are again gradually firming up. This is one of the few things not adversely affected by the builders' strike, but it is otherwise in the second-hand trade. Deals, 3 x 9, are only 1s. per foot and a similar price is asked for good roofing iron. Prices are, of course, on the down grade in sympathy with the tendency of new timber falling. On account of the strike it is impossible to get the mills to cut the various sizes required, and therefore it is out of the question to execute any orders received for timber outside sizes in stock.

British Export Restrictions Removed.

His Majesty's Trade Commissioner in South Africa is authorised by cable to state that the following have been removed from the list of articles prohibited from exportation from the United Kingdom, namely: Cable lead sheathed, carbon, cylinders for storing cases, fish canned except salmon, lead compounds except white lead, linen rags and waste, ramie fibre, salt, varnishes, paint except gold paint, polishes containing wax, canvas old and cuttings, cotton rags, esparto grass, fishing gear, fustic, hemp waste, jute wrappers and waste, mahogany and hardwoods, piping for stoves, sisal strings and waste, tents, tinplate, anchors, arrowroot, banana meal, barometers, biscuits, cables, chain, cakes, caramel casings log, celluloid ordinary or non-inflammable, cereal foods, cornflour, dextrine, farina, gas meters, ginger, horns ox, meat extract, potato flour, saccharine, sage, soup, soup preparations, spelter, starch, tapioca, vegetables preserved, wine, zinc.

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